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TWO NEW PSEUDOSCORPIONS OF THE GENUS *DOLICHOWITHIUS*

By C. CLAYTON HOFF¹

While studying the pseudoscorpions in the collections of the American Museum of Natural History, the writer found representatives of two new species belonging to the genus *Dolichowithius*. These are de-

scribed in the present paper. The type specimens are mounted in Canada balsam and deposited in the American Museum of Natural History.

SUBORDER MONOPHYRIONIDA CHAMBERLIN, 1929

CHELIFERIDAE HAGEN, 1878

Withiinae Chamberlin, 1931

GENUS *DOLICHOWITHIUS* CHAMBERLIN, 1931

In the generic characterization given by Beier (1932a) for the genus *Dolichowithius*, there occurs the following statement: "*st* etwa in der Mitte zwischen *sb* und *t* stehend." This generic characteristic should be deleted since, in the male especially, the tactile seta *st* of the movable chelal finger is often much closer to *sb* than to *t*.

Dolichowithius solitarius, new species

Figures 1-2

MALE: Body fairly stout; yellow in color; 1.6 mm. long (abdomen somewhat contracted). Cephalothorax with posterior margin straight except for a very weak median projection; with six clavate setae along posterior margin; two transverse furrows, one near the midpoint of the cephalothorax, the other near the posterior margin; length about 0.67 mm.; greatest width about 0.6 mm. and located near the level of the median transverse furrow, rapidly narrowed anteriorly, slightly narrowed posteriorly; entire surface of cephalothorax coarsely granular, with a few clavate setae, of which about 20 are on the median disc between the two transverse furrows; a

pair of eye spots present. Abdomen nearly 1 mm. long in treated specimen; width about three-fourths of the length; yellowish in color. Tergites with coarse scale-like sculpturing on the scuta; tergites 4 to 9 appear weakly divided; tergites 2, 3, and 10 seem obscurely divided; setae clavate; anterior tergites with a straight row of 8 to 10 marginal setae; maximum number of setae for each tergite about 16 in posterior tergites where the medial, central, and lateral setae of each scutum may be placed anterior to the row; setae of tergites 1 through 9 as follows: 8:10:10:10:12:12:14-16:12:14. Sternites except the anterior four and the eleventh appear divided, for the most part smooth; setae of sternites long and acuminate, usually forming a single marginal row of about five setae on each half-sternite and an additional lateral seta somewhat anterior to the row; sternites 7, 8, and 9 with median compact groups of setae between the sternal halves, each group consisting of between 15 and 20 small acuminate setae flanked on each side by a much larger acuminate seta. Each stigmatic plate apparently with two setae; pleural membranes marked by wavy longitudinal plications.

Chelicera: Length 0.2 mm., width of base 0.12 mm.; laminal and interior setae long, simple, acuminate; basal and sub-basal setae with subterminal dentations and shorter than the laminal and interior

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setae; exterior seta acuminate; flagellum of four setae. Movable finger about 0.16 mm. long; galeal seta reaching slightly beyond the tip of the galea; galea a straight stalk, weakly trifurcated near the distal end; movable finger with two subapical lobes on the inner margin; more than 15 (position precludes an accurate count) plates in the serrula exterior. Fixed finger with a well-developed but very transparent lamina exterior; serrula interior with the distal tooth spine-like and serrate, the three more proximal teeth plate-like and serrate, others fused into a velum; three well-developed denticles in the distal two-fifths of the inner margin of the finger.

Palp: Very much elongated; sum of lengths of femur and tibia approximate to the length of the body; palps light yellow in color with chelal fingers light reddish brown; setae of palps clavate to subclavate except for short, acuminate setae of chela; all podomeres except chela somewhat granular, the trochanter and femur more so than the tibia. Maxilla smooth on ventral face, granular on lateral surface; length 0.32 mm.; width 0.22 mm.; apical setae poorly developed. Trochanter with a rounded and weakly developed dorso-lateral protuberance; flexor margin of trochanter evenly convex and markedly granular; length about 0.32 mm., 1.9 times the width. Femur very slender; widest near the distal one-fourth; granular; numerous clavate to subclavate setae, terminally denticulate; lateral margin convex but somewhat centrally flattened; flexor margin almost straight; length 0.82 mm.; width nearly 0.155 mm.; length 5.3 times the width. Tibia elongate; more pedunculate than the femur; extensor margin concave except near the ends; flexor margin very weakly convex; length 0.85 mm.; width 0.16 mm.; length 5.3 times the width. Chela moderately slender; not granulate; setae acuminate, with a few fine, subterminal denticulations; both extensor and flexor margins of chela evenly convex; hand narrowed gradually toward both base and fingers; widest near the center of the hand; length of chela without pedicle 1.01 mm., width 0.24 mm., length 4.2 times the width; depth of chela nearly

equal to the width; hand without pedicle 0.55 mm. long; movable finger shorter than the hand, 0.46 mm. long. Marginal teeth of fixed finger contiguous, subacute, and conical in the distal part of the row but weaker and more bluntly rounded in the proximal part of the row, teeth about 35 in number, wanting from the proximal one-sixth of the fixed finger margin; marginal teeth of movable finger similar to those of the fixed finger. Fixed finger with eight tactile setae; external series with *esb* and *eb* at base of finger and separated by less than two areolar diameters, *et* removed from the tip of the finger by a little less than one-sixth of the finger length, *est* at about the midpoint of the finger and about equidistant from the finger tip and from *eb*; internal series with *it* and *ist* not over three or four areolar diameters apart and proximal to *est*, *isb* and *ib* near base of finger and at about the level of *esb* and *eb*, *isb* not separated from *ib* by more than three areolar diameters. Movable finger with four tactile setae: *t* about two-fifths of finger length from tip of finger, *sb* removed from the finger base by slightly more than the width of the finger at the level of *sb*, *b* separated from *sb* by about two areolar diameters, *st* twice as far from *t* as from *sb*.

Legs: Moderately stout; yellow in color; claws sickle-shaped, simple; setae subclavate to acuminate; subterminal seta simple; surface of many pedal podomeres with scale-like sculpturing. First leg with trochanter relatively deep, a few acuminate setae, surface apparently smooth; pars basalis of femur 0.133 mm. long, 0.14 mm. deep, setae sparse and paucidenticulate; articulation between pars basalis and pars tibialis little movable; weak, scale-like markings covering surface of both parts of femur; pars tibialis 0.26 mm. long, 0.15 mm. deep, flexor margin very weakly convex, extensor margin much more convex, setae of flexor margin acuminate to subclavate, setae of extensor margin shorter and more clavate; tibia 0.29 mm. long, 0.09 mm. deep, greatest depth near the distal end, flexor margin convex, extensor margin basally convex but distally almost straight, relatively long acuminate setae on medial surface, subclavate setae on ex-

tensor surface, surface sculpturing very weak; tarsus with nearly straight margins, podomere narrower distally, length 0.277 mm., depth 0.057 mm., setae of flexor margin acuminate, setae of extensor margin denticulate, surface very weakly sculptured. Fourth leg with trochanter stout, few acuminate setae; femur with pars basalis subtriangular, surface smooth, a few long and acuminate setae especially on the flexor surface, length 0.192 mm., depth 0.145 mm., flexor margin convex in the basal half; pars tibialis much wider than pars basalis, flexor surface almost straight, extensor surface very convex especially proximally, surface especially on the extensor side with scale-like markings, setae of extensor surface denticulate and subclavate, setae of flexor surface acuminate; length of pars tibialis 0.44 mm., depth 0.225 mm.; entire femur stout, length 0.53 mm.; tibia stout, deepest near the distal one-third, length 0.405 mm., depth 0.118 mm., flexor margin markedly convex, extensor margin weakly convex, setae of the flexor margin acuminate, setae of extensor margin subclavate, surface of podomere with weak, scale-like sculpturing; tarsus very weakly sculptured, margins nearly straight, setae of flexor margin acuminate, those of extensor surface subclavate to clavate, length 0.325 mm., depth 0.061 mm.; very long tactile seta of extensor margin of tarsus inserted nearly two-thirds of podomere length from proximal end.

Genital complex: Sex organs simple; six or eight sensory setae on each side anterior and lateral to the genital opening; posterior operculum with three or four setae on each side of the median line.

FEMALE: Unknown.

TYPE LOCALITY: The single specimen, the male holotype, from a collection labeled "Costa Rica." No other data available.

Dolichowithius solitarius is closely related to three *Dolichowithius* species in which the palpal podomeres are very long and slender. From one of these, *D. extensus* Beier, 1932, our form is easily separated by the stouter and shorter palpal podomeres. Separation of our species from the other two related forms, *D. vicinus* Beier, 1932, and *D.*

longichelifer (Balzan, 1890), is a little more difficult. A study of the literature (Beier, 1932a, 1932b) indicates that *D. vicinus* has palpal podomeres considerably longer than in our form; the palpal femur and tibia are more slender but the chela is stouter in *D. vicinus* than in *D. solitarius*. From *D. longichelifer* our form may be distinguished by a difference in the shape of the chelal hand since, when viewed from above, *D. solitarius* has a more convex extensor margin and a more evenly convex flexor margin; also *D. solitarius* has a more marked concavity on the external margin of the palpal tibia. These differences are clearly seen when a comparison is made between our specimen and the figure given by Beier (1932a, fig. 224) for *D. longichelifer*. A difference also exists in the position of the tactile setae of the movable finger. For *D. longichelifer*, Beier (1932a) writes "st etwa in der Mitte zwischen sb und t befindlich." In *D. solitarius*, *st* is twice as far from *t* as from *sb*.

***Dolichowithius granulosis*, new species**

Figures 3-5

MALE: Measurements and ratios of the holotype are followed in parentheses by the corresponding measurements and ratios of the paratype when the holotype and paratype differ significantly. Body moderately stout; yellow in color; 1.75 mm. long. Carapace very granular; two transverse furrows present; widest near the center at the anterior transverse furrow, rapidly narrowing anteriorly; posterior width a little less than the greatest width; posterior margin straight, with six marginal setae; anterior margin medially straight, with four setae; all setae of carapace clavate; two eye spots present; length of carapace 0.69 (0.66) mm., greatest width 0.56 (0.5) mm., posterior width 0.51 (0.45) mm. Abdomen stout, about 1.1 mm. long, 0.75 (0.65) mm. wide. Tergites, except the first and eleventh, divided, often obscurely so; scuta of tergites with heavy, scale-like sculpturing, setae clavate and forming a single transverse row at the anterior end of the abdomen but with a median and a lateral seta anterior to the row in each of the central and pos-

terior scuta; formula for chaetotaxy of tergites 1 through 10 as follows: 6-8: 6-8:8:10:10:12-14:12:10-12:10-12:10. Sternites weakly divided, very weakly sculptured, setae acuminate, maximum number in any sternite 14; compact areas of bristles on sternites 7, 8, and 9; number of setae in bristle areas variable, usually about 12 setae in the area on sternite 7 and 15 to 20 setae on each of the other two sternites. Each anterior stigmatic plate with one large acuminate seta, each posterior plate with two; pleural membranes with wavy plications, rugose in general appearance.

Chelicera: Fairly stout; about 0.18 mm. long, width of base 0.11 (0.102) mm.; yellow to grayish yellow in color; base smooth; interior and laminal setae long and acuminate; subbasal and basal setae relatively stout and with a few subterminal denticulations; the exterior seta acuminate; flagellum of four well-developed setae, the longest and distalmost one unilaterally serrate along the distal one-third of the anterior margin. Fixed finger slender; lamina exterior well developed; inner margin of finger with three large denticles confined to much less than the distal half of the margin; three small denticles closely spaced along the inner margin of the apical tooth; serrula interior with the distal tooth serrate and spine-like, the three more proximal teeth ligulate or plate-like and also with serrate margins, other teeth fused into a velum. Movable finger little curved, relatively much stouter than the fixed finger; apical tooth terminally bicuspid; serrula exterior of 17 or 18 ligulate plates; two subapical lobes located very close to the apical tooth; galeal seta inserted on a level with the more proximal subapical lobe and reaching nearly to the end of the galea; galea straight, fairly stout, with three or four acute and short subterminal and terminal rami.

Palpus: Moderately slender; yellowish red to golden color with the chela a little darker than the rest of the palp; chela smooth and with relatively long, acuminate to paucidentate setae; other podomeres moderately granular, with pau-

cidenticulate to clavate setae; palp somewhat longer than the body. Maxilla with the ventral surface smooth, lateral surface granular; setae acuminate, apical process with two poorly developed apical setae; length 0.37 (0.31) mm., width 0.22 (0.19) mm. Trochanter fairly stout; flexor margin evenly convex, granular, with numerous denticulate setae; extensor surface with a dorso-lateral protuberance and with two or three clavate setae; length of trochanter about 0.32 mm., about 1.9 times the width. Femur with surface granular; pedicle fairly well developed; flexor margin virtually straight except near the ends; extensor margin convex but much flattened in the central portion; setae of flexor surface subclavate; setae of the extensor surface subclavate to clavate; length of femur 0.62 (0.57) mm., greatest width at about the distal one-fourth and equal to 0.152 (0.145) mm.; length about 4.1 (3.9) times the greatest width. Tibia equal in length to the femur but somewhat stouter; most setae paucidentate; surface granular; pedicle as long as wide; flexor margin convex with a slight concavity near the distal end; extensor margin virtually straight between the pedicle and the distal fourth, distally the margin is angular; length 0.62 (0.56) mm., width 0.175 (0.167) mm.; length 3.55 (3.35) times the width. Chela from the dorsad with the extensor margin flatly convex and the flexor margin evenly convex; pedicle near the center of the base; setae subacuminate, paucidentate, relatively long; hand and fingers smooth; fingers gently curved, fairly stout; chela without pedicle 0.875 (0.85) mm. long, width 0.245 (0.23) mm., length 3.55 (3.7) times the width; hand 0.45 (0.44) mm. long; finger but little shorter than hand and measuring 0.44 (0.42) mm. in length; depth of chela subequal to the width. From the side, dorsal margin of chela evenly convex, ventral margin flatly convex; movable finger curved with outer margin convex, inner margin concave; fixed finger stouter than movable finger, central portion of the outer margin weakly convex to nearly straight, inner margin convex. Fixed finger with between 30 and 35 contiguous, rounded teeth, each of which

has a papillose cusp placed slightly toward the proximal corner of the tooth; movable finger with about 35 teeth similar to the teeth of the opposing finger. Movable finger with four tactile setae: *t* just distal to the midpoint of the finger and midway between *b* or *sb* and the finger tip, *st* about midway between *t* and the proximal margin of the finger, *sb* removed from the finger base by about the width of the finger at the level of *sb*, *b* about one areolar diameter proximal to *sb*. External series of fixed finger with *et* about one-fifth of the finger length from the tip, *est* near the midpoint of the finger, *esb* and *eb* near base of finger and separated by less than two areolar diameters; internal series with *it* and *ist* separated by less than two areolar diameters and located a little proximal to the level of *est*, *isb* and *ib* located at about the level of *esb* and *eb*.

Legs: Fairly stout; yellow in color; setae and sculpturing variable; tarsal claws and subterminal setae simple. First leg with trochanter suboval in shape, length about 0.15 mm., about 1.5 times the depth; pars basalis with flexor margin weakly convex and with a long pseudotactile seta toward the distal end, setae sparse and acuminate, surface partly sculptured with scale-like lines, length about 0.13 mm., length little more than depth; pars tibialis with flexor margin very weakly convex and almost straight, extensor margin evenly convex, scale-like sculpturing conspicuous, setae of extensor surface short and paucidenticulate, those of the flexor surface acuminate, length 0.26 (0.25) mm., depth 0.12 mm.; tibia with sculpturing as in the preceding podomere, numerous long acuminate setae on the flexor surface, almost asetaceous on the extensor surface, flexor margin evenly convex, extensor margin proximally convex but with a weak concavity in the distal two-thirds, length 0.29 (0.275) mm., depth greatest in the distal one-third and equal to 0.076 mm.; tarsus

subcylindrical, margins nearly straight, sculpturing weak, setae fairly numerous, setae of flexor surface relatively long and acuminate, those of extensor surface shorter and with a few subterminal denticulations, length about 0.26 mm., 4.7 times the depth. Fourth leg with sculpturing and chaetotaxy as in the first leg; in general, setae of the flexor surface of podomeres are acuminate while those of the extensor surface are multidenticulate to subclavate; trochanter subcylindrical, about 0.19 mm. long, 0.13 mm. deep; bars basalis subtriangular, the distal portion of the flexor margin nearly straight, surface of podomere virtually smooth, acuminate setae on the flexor surface, length about 0.18 mm., depth 0.13 mm.; pars tibialis with the flexor margin nearly straight and continuous with the flexor margin of the pars basalis, the extensor margin evenly convex, length 0.43 (0.41) mm., depth 0.175 mm.; entire femur 0.52 (0.495) mm. long, 0.175 mm. deep; tibia with flexor margin convex, extensor margin proximally convex but distally straight to weakly concave, length 0.385 (0.375) mm., depth 0.095 mm.; tarsus subcylindrical with the greatest depth toward the proximal end, length 0.315 mm., depth about 0.06 mm. or slightly more; tactile seta of the extensor surface of the tarsus very long and located a little more than two-thirds of the podomere length from the basal margin.

Genital complex: Much as in the preceding species.

TYPE LOCALITY: The male holotype and one male paratype in a collection made by W. G. Hassler from the upper Essequibo River, Onoro region, British Guiana, between December 13 and 17, 1937.

Dolichowithius granulatus can be separated from other species of the genus by the size and shape of the palpal podomeres. It seems closely related to *D. modicus* Beier, 1932, and *D. simplex* Beier, 1932, because of the moderately slender palpi.

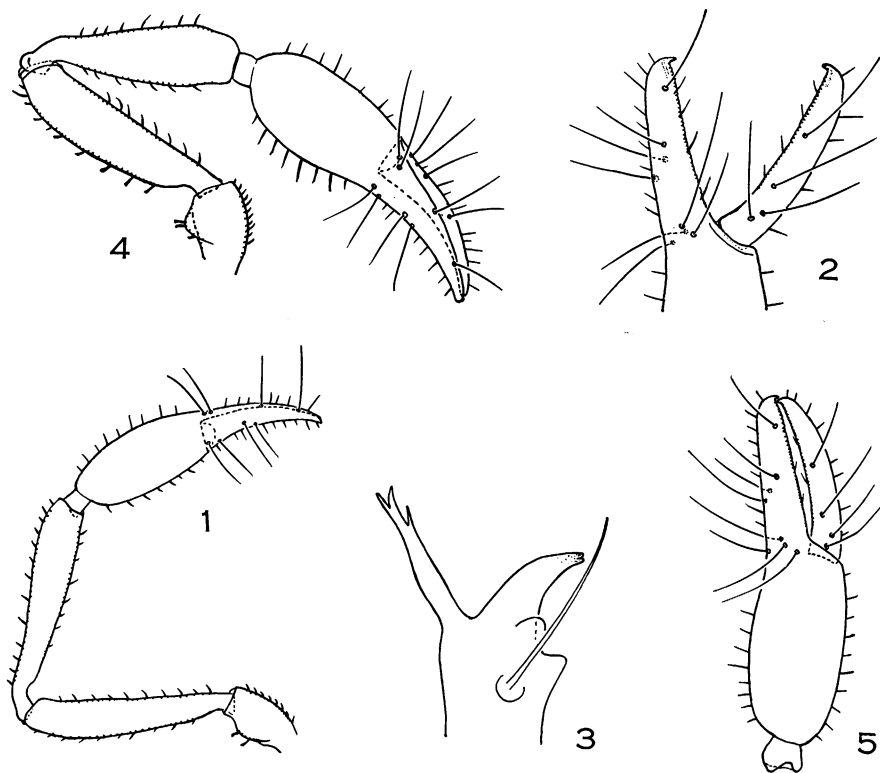
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Dolichowithius solitarius, new species

- Fig. 1. Dorsal view of palp with tactile setae of movable chelal finger omitted, male holotype.
 Fig. 2. External view of chelal fingers, male holotype.

Dolichowithius granulosus, new species

- Fig. 3. End of movable finger of chelicera, serrula exterior omitted, male holotype.
 Fig. 4. Dorsal view of palp, male holotype.
 Fig. 5. External view of chela, male holotype.

