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OPHIDIAN LUNG MITE

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ENTOMYSSUS VITZHEIMI (ACARINA), A NEW

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Reprinted from THE JOURNAL OF PARASITOLOGY, August, 1940, Vol. 26, No. 4,
pages 309-313.*ENTONYSSUS VITZTHUMI* (ACARINA), A NEW
OPHIDIAN LUNG MITE*

FRED L. SCHMIDT

A large bull snake, *Pituophis sayi*, captured in Stillwater, Oklahoma, November 2, 1939, was found to harbor 32 specimens (6 male and 26 female) of an apparently new dermanyssid lung mite of the genus *Entonyssus* Ewing 1922.

The mites were fixed in hot Bouin's fluid and preserved in 70 per cent alcohol. Specimens cleared in Magath's glycerolactophenol and mounted in glycerine were used for temporary study; others were mounted in balsam.

Entonyssus vitzthumi n. sp.

(Figs. 1-12)

Features common to both sexes: Color milky white. Body proper (Figs. 4, 5) ellipsoidal, widest at level of legs III, about one and one-half times as long as wide, somewhat depressed.

Dorsal plate single, subelliptical, nearly covers dorsal surface; armed with a subsymmetrical pattern of basally articulate processes, including about 15 pairs of short stout spines of variable proportions distributed over the anterior two-thirds of the shield and a single pair of much longer slender setae on its posterior margin.

Capitula of typical form, continuously surrounded by a single chitinous shell having median forward dorsal and ventral extensions (the labrum and labium) enclosing the bases of the chelicerae. Front edge of labrum smoothly rounded. Front margin of labium (Fig. 8) with a median notch, each half being further divided into 3 lobes; medial lobes sharp-pointed, straight-sided, and hispid on anterolateral margins; middle lobes shorter, more blunt, smooth-edged, ventrad to and overlapping others; lateral lobes sharply pointed, smooth, and curved dorsad laterally along sides of chelicerae. Labium distinctly and abruptly raised (depressed in ventral view) in the area between the middle lobes and provided with 3 pairs of spines located one pair at the bases of the above-mentioned middle lobes and 2 pairs laterally near the base of the labium, somewhat in a transverse row—the members of the posterolateral pair being much the smallest of the group. Hypostome narrowly triangular with slightly concave sides, finely hirsute on both surfaces. Mouth not observed.

Legs (Fig. 1) nearly equal in length, IV being slightly the longest and I slightly the shortest. Legs II, III, and IV similar in shape and structure, II being somewhat the stoutest and IV the most slender. Spines present on all leg joints, somewhat variable in arrangement but with about 60 on each leg I, 50 on II, 40 on III, and 40 on IV; all spines of approximately the same shape and size except

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The writer is indebted to Professor George A. Moore of the same institution for the snake in which the new mite was found and to Mr. W. Eugene Hubbard for the information that he had found a few mutilated specimens of an undescribed mite in preserved bull snakes.

The new species is named in honor of H. Graf Vitzthum, Berlin, by whom *Entonyssus glasmacheri* was described.

that most of the coxal spines and 7 of the distal spines of tarsus I (Fig. 12) are more slender and much longer than the others. All tarsi provided with prominent strongly curved claws. Pulvillus (Fig. 10) of each foot cone-shaped with the base of the cone concave and distal and having its margin divided into 6 lobes, 4 of these (2 dorsal and 2 ventral between the claws) broad and short, the other 2 (located before and behind the others and adjacent to the claws) long and slender. The dorsal surface of the pulvillus is supported by 3 chitinous thickenings convergent at its base—2 of these are continued distally into the slender lobes, the third (middle) terminating near the notch between the dorsal lobes. All legs 7-jointed, pseudo-joints being present in all femora and basal segments of tarsi, the pseudojoint of tarsus I very faint and only partially complete. Clawbars all prominent, each comprising 3 lobes, 2 symmetrically paired anteroposteriorly and one ventral; concavities between the middle and paired lobes enclose bases of claws.

Female: Body (Figs. 4 and 6) provided with widely separated dorsal, sternal, genitoventral, and anal plates, the intervening bare skin being finely wrinkled in a finger-print effect. Sternal plate longitudinally elongate, subhexagonal, situated at level of coxae II and III, bears 3 pairs of long spines one near each vertex of the hexagon. Genitoventral plate between coxae IV, unarmed, anteriorly truncate, posteriorly rounded, widest behind the middle. Anal plate subcircular; bears 3 long spines, located one posterior and 2 anterolateral to anus.

Chelicerae (Fig. 2) stout, pincer-like, with moderately chitinized basal sheaths. Fixed (dorsal) chela sharply bent near tip at an angle of slightly more than 90 degrees, nonalate; 2 characteristic tandem rounded serrations embrace the angle of curvature on its sharp edged ventral surface; a small mediodorsally situated spur at base of fixed chela armed with a single small spine. Movable chela falciform and provided with a single small ala on anterior half of its medial side. Fimbriate processes on anteroventral margin of socket housing movable chela.

Palpus (Fig. 11) apparently only 4-jointed, the terminal segment corresponding to the 2 distal palpal joints of the male and of either sex in other species; 31 spines distributed over the 4 joints, spines of 2 sizes, the longer situated near the distal end of the distal segment; one very stout furcate spine on medial side near middle of distal segment of palpus, spines more abundant on distal segment.

Male: Ventral plates united to form a single somewhat rectangular shield armed with 13 (1 median and 12 paired) long spines. Genital pore simple, in front portion of ventral plate.

Chelicerae (Fig. 3) modified, the fixed chela spurlike, supposedly functioning as an intromittent organ or "Spermatophorenträger" as described for *E. glasmacheri* by Vitzthum (1935). Movable chela bifurcate near middle into a long ventral pointed blade-like dorsally curved branch and a very short slender straight sharp-pointed dorsal branch closely appressed to the former, the line of bifurcation continued backward toward base of chela as a groove. Anteroventral margin of socket about base of movable chela fimbriated as in the female.

Palpus (Fig. 7) 5-jointed, its spination similar to that of female except that the furcate spine is lacking; its distal segment minute, 2-spined, and entirely ventrad to the penultimate segment.

Measurements: Averages in microns from 3 males or 4 females. L = length, W = width, D = diameter, F = female, M = male. Total L from anterior edge of labrum F 756 M 624. Trunk F L 708 W 372, M L 578 W 300. Dorsal shield F L 696 W 366, M L 570 W 294. F sternal plate L 187 W 66, genitoventral plate L 153 W 133, anal plate D 120. M ventral plate L 460. L of legs—F I 495 II 539 III 533 IV 594, M I 446 II 495 III 489 IV 537. L of tibiae—F I 60 II 66 III 55 IV 68, M I 57 II 60 III 45 IV 57. L of tarsi—F I 134 II 159 III 162 IV 192, M I 126 II 140 III 138 IV 159. L of distal segments of tarsi—F I 35 II 56 III 53 IV 50, M I 35 II 43 III 40 IV 39. Long D of claw bar F 16 M 14. Claws (M and F; P = L of point, B = L of base)—I P 14 B 11; II, III, and IV P 19 B 17. L of palpus M and F 100. L of 2 distal segments of chelicerae F 33 M 225.

Host: *Pituophis sayi* (Schlegel 1837) Cope 1898.

Habitat: Lung and trachea.

Locality: Stillwater, Oklahoma.

Cotype specimens: Two males and 4 females mounted in toto in balsam. In U. S. Nat. Mus.

The lung mites of snakes belong to 2 genera, *Entonyssus* Ewing 1922 and *Ophiopneumicola* Hubbard 1938, and include the following known species: (1) *O. bedfordi* (Radford 1937) mihi from *Dendraspis angusticeps* Smith; (2) *O. colubri* Hubbard 1938 from *Coluber flagellum flavigularis* (Hallowell); (3) *O. hamertoni* (Radford 1939) mihi from *Thamnophis sirtalis* (Linné); (4) *E. halli* Ewing 1922 from a "Pine snake"; (5) *E. rileyi* Ewing 1924 from a "Rattlesnake"; (6) *E. glasmacheri* Vitzthum 1935 from *Elaphe quadrivittata* (Holbrook); (7) *E. ewingi* Hubbard 1939 from *Crotalus cinereus* Le Conte in Hallowell; and (8) *E. vitzthumi* n. sp. from *Pituophis sayi* (Schlegel). *O. bedfordi* is a Rhodesian species; the others are all from North American hosts although the type specimens of *E. glasmacheri* and *O. hamertoni* were taken from snakes that died in captivity in Berlin and London respectively.

Radford's species, originally listed in *Entonyssus*, are transferred to *Ophiopneumicola* as indicated above because they more nearly conform to the diagnosis of the latter genus, particularly in not having the fixed chela of the female chelicera hooked or strongly recurved at the tip.

E. vitzthumi differs from *E. halli* (female) in that the chelae ("arm"s) do not conform to the description—" . . . fixed arm harpoon-like, with a sharp point and a distal, backwardly directed barb, movable arm not extending to the tip of fixed arm . . .";

from *E. rileyi* (female) in that the fixed chela is not harpoon-like, the movable chela is not stouter than the fixed, the ultimate segment of the palpus apparently corresponds to both of the 2 distal segments in *E. rileyi*, the abdomen is much more elongate and not "naked," and the first leg is not one of the longer ones;

from *E. glasmacheri* in that the female fixed chela is not acutely recurved, no "Schultern" occur on the body or dorsal shield, no tritosternum is apparent, the female sternal and genitoventral plates are differently shaped and the latter is unarmed, the male ventral plate differently shaped, and the male movable chela is not "S-förmig";

from *E. ewingi* in the simpler form of the chelicerae, spiracles, hypostome, tarsi I, and labrum; different form of the labium; occurrence of only 4 distinct joints in the female palpus; presence of a single ventral plate in the male; and hair-like form of certain setae on the coxae and on most of the chitinous plates of the body.

For comparative study information was obtained from the original descriptions of the 7 previously known ophidian lung mites—the male of

E. ewingi having been first described by Hubbard (1940). In *O. colubri*, *E. halli*, and *E. rileyi* the males are as yet unknown.

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EXPLANATION OF PLATE

All figures concern *Entonyssus vitzthumi* n. sp. and were made from adult specimens. Figs. 2, 3, 8, 10, and 12 are freehand studies; the others were drawn with the aid of a camera lucida, minor detail being supplied by freehand. In Figs. 1, 7, 11, and 12 the spines on the obverse and reverse surfaces are represented in solid and broken lines respectively.

FIG. 1. Female right legs, arranged in order I to IV, posterior views.

FIG. 2. Female left chelicera (2 distal segments), lateral view—note medial ala on movable chela. Double lines of chelae represent surfaces of solid chitin.

FIG. 3. Male left chelicera (2 distal segments), medial view. Stippled areas represent solid chitin.

FIG. 4. Female trunk, ventral view. Scale, 500 μ .

FIG. 5. Male trunk, ventral view—shows genital pore in front portion of ventral plate. Scale, 500 μ .

FIG. 6. Female trunk, dorsal view—shows spine pattern, anal seta, and spiracles. Scale, 500 μ .

FIG. 7. Male left palpus, ventral view. Scale, 50 μ .

FIG. 8. Portion of male head, ventral view—note front margin of labium (heavy line) and hypostome. Along the transverse broken line the median anterior portion of the labium is abruptly elevated.

FIG. 9. Male trunk, dorsal view. Scale, 500 μ .

FIG. 10. Female left foot II, dorsal view—shows claws, clawbar, and pulvillus. Stippled areas represent solid chitin.

FIG. 11. Female right palpus, ventral view. Note medial furcate spine on terminal segment. Scale, 50 μ .

FIG. 12. Distal segment of female left tarsus I, ventral view—note the faint pseudojoint partially surrounding the proximal end.

