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**FUMONTANA DEPREHENDOR, N. GEN., N. SP., THE FIRST
TRIAENONYCHID OPILIONID FROM EASTERN NORTH AMERICA
(OPILIONES: LANIATORES: TRIAENONYCHIDAE)**

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ABSTRACT

Fumontana deprehendor, n. gen., n. sp., is the first member of the family Triaenonychidae, subfamily Triaenonychinae to be reported from eastern North America. Anatomical features of the new species relate it both to the species of western North America and of the southern hemisphere. Incidental observations: The subfamily name Triaenonychinae should be attributed to Soerensen, not Pocock. Travunioidea is the proper spelling for a superfamily name based on the genus *Travunia*.

INTRODUCTION

The taxonomy of the laniatorid opilionids of the New World is currently undergoing a drastic reorganization at the family level. Traditionally, three families, Phalangodidae, Cosmetidae, and Triaenonychidae, have been considered represented in the North American fauna, with the latter restricted to a few species in the western part of the continent, and the former two more widespread across the southern half. Recently, using characters and concepts developed by Kratchovil and others, in a study of Central European cave opilionids, Briggs (1969, 1971a, 1971b) has recognized and named two new families, Erebomastridae and Pentanychidae, and a new triaenonychid subfamily, Paranychinae. Briggs (1974) has also reported a species of Travuniidae (*Speleonychia sengeri* Briggs) from a lava tube in Idaho. The new taxa are keyed in Briggs (1969, 1971b).

Kratchovil, *et al.* (1958) divided the Laniatores into two superfamilies. In Oncopodoidea, the third and fourth legs of the adults bear two separate claws, and the penis lacks muscles between the dorsal and ventral plates. In Travunioidea (the correct spelling of a superfamily name based on the generic name *Travunia*), the third and fourth legs of adults bear branched claws, and there are muscles between the ventral and dorsal plates of the penis. Silhavý (1973) has proposed another classification, largely following Mello-Leitao and Ringuelet, and based on a wide variety of somatic and genitalic characters. Silhavý's system is quite different from that of Kratchovil, *et al.*, particularly in the numbers of families recognized, and in the position accorded the peculiar Oncopodidae, which Silhavý places in a separate suborder. Although the Kratchovil-Briggs classification has gained wide acceptance, it has two major weaknesses: it virtually ignores the tropical families well-studied by Silhavý, Ringuelet and others, and it is based much too heavily on a single character, namely the form of the posterior claws. The center of distribution

and evolution of the laniatorids is in the tropics; only when the tropical fauna has been thoroughly studied using modern methods can a meaningful classification for the group be arrived at. It seems likely that at this time there are too many family names.

Whatever the outcome of the taxonomic debate, it seems clear that the family Triaenonychidae forms a phylogenetic unit, though its extent is not yet entirely clear. The family is well-represented in western North America (reviewed in Briggs, 1971b), Chile, South Africa, New Zealand and Australia, and in Korea and Japan. In other opilionid groups, this pattern often includes the Appalachian Mountains in the eastern United States (Suzuki, 1967; Shear, 1975).

A few years ago, while examining the opilionid collection of the Chicago Natural History Museum, courtesy of Mr. Henry Dybas, I ran across a very peculiar laniatorid opilionid collected by him in Greenbrier Cove, Great Smoky Mountains National Park, Tennessee. The specimen, a male, closely resembles certain tropical phalangodids and podoctids in the form of the legs, eye tubercle, and spination of the scute. At first I thought it might have been mislabelled, but knowing Mr. Dybas' reputation as a careful collector and curator, I put the specimen aside and resolved to search for more material in Greenbrier Cove. That opportunity presented itself in June, 1975, through the hospitality of Dr. Frederick Coyle, of Western Carolina University, and the management of the Great Smoky Mountains National Park.

Greenbrier Cove is a mountain valley with a rather narrow entrance along the Little Pigeon River. The elevation of the valley floor is from 1200 to 2200 ft.; most of the forest is secondary and consists of the usual cove hardwoods, with hemlock important along the streams, and a dense undergrowth of *Rhododendron*, *Kalmia* and *Leucothoë*, all ericaceous shrubs. Extensive handsorting of litter produced many laniatorids, chiefly species of *Theromaster* and *Bishopella*, but none resembling the Dybas specimen. However, a sample taken back to the laboratory and sorted using Tullgren funnels produced a single female of the animal described below as *Fumontana deprehendor*. The following day, a second Tullgren sample was taken from the same spot, and litter from the region was handsorted, but no further specimens appeared.

Family Triaenonychidae Soerensen
Subfamily Triaenonychinae Soerensen

The new genus *Fumontana* is placed in the subfamily Triaenonychinae because of the presence of two short branches on the posterior claws (Figs. 9, 10), the narrow sternum (Fig. 2), and the form of the genitalia (Figs. 5, 6). Roewer (1923) and Briggs (1971b), and others, attribute the subfamily name to Pocock, but according to the Rules of Zoological Nomenclature promulgated by the ICZN, the original proposal of a family-level name includes names for all coordinate family-level taxa—if there is a family name Triaenonychidae, this implies the existence of a subfamily bearing the same name. Thus the subfamily name should be attributed to Soerensen. The subfamily is found in the western United States (*Sclerobunus*, *Cyptobunus*, *Zuma*), and in Chile, New Zealand and Japan.

Fumontana, n. gen.

Description.—Anterior margin of carapace with three projections, recesses above chelicerae distinct. Eye tubercle wider than long, situated one-third of scute length from

anterior margin. Pair of large tubercles at anterior scute corners. Five dorsal areas delimited by paired tubercles or rows of same. Ninth abdominal tergite fused to anal plate. Second and third coxae of males proximally completely fused without trace of suture, first and fourth coxae free. Sternum as in Fig. 2. Genital operculum oval-triangular. Chelicerae normal. Pedipalps sexually dimorphic, much larger in male than in female. Palpal claw movable. Leg femora, patellae and tibiae with anterior and posterior rows of spined tubercles, best developed on leg I, where tubercles are twice width of segment; femur II similar to I; tubercles much reduced on femora III and IV. Tarsal formula 3-9-4-4; basitarsi not much longer than individual distitarsal segments. Metatarsi divided into long calcaneus and short astragalus, calcaneus with distodorsal spined tubercle on all legs in female, only on legs III and IV in male. Claws of legs III and IV with lateral branches much smaller than median prong. Penis short, stout, provided with muscles between ventral and dorsal plates; glans with two flanking setose lobes; seminal canal ends in spine-like projection. Ovipositor typical of family.

Type species.—*Fumontana deprehendor*, n. sp.

Etymology.—The generic name is feminine, derived from the Latin words for “smoke” and “mountain.”

Diagnosis.—Completely different from any known North American laniatorid genus in the long spined tubercles of the legs. A very few small similar tubercles are found on the femora of species of *Cyptobunus* (Briggs, 1971b), suggesting some relationship.

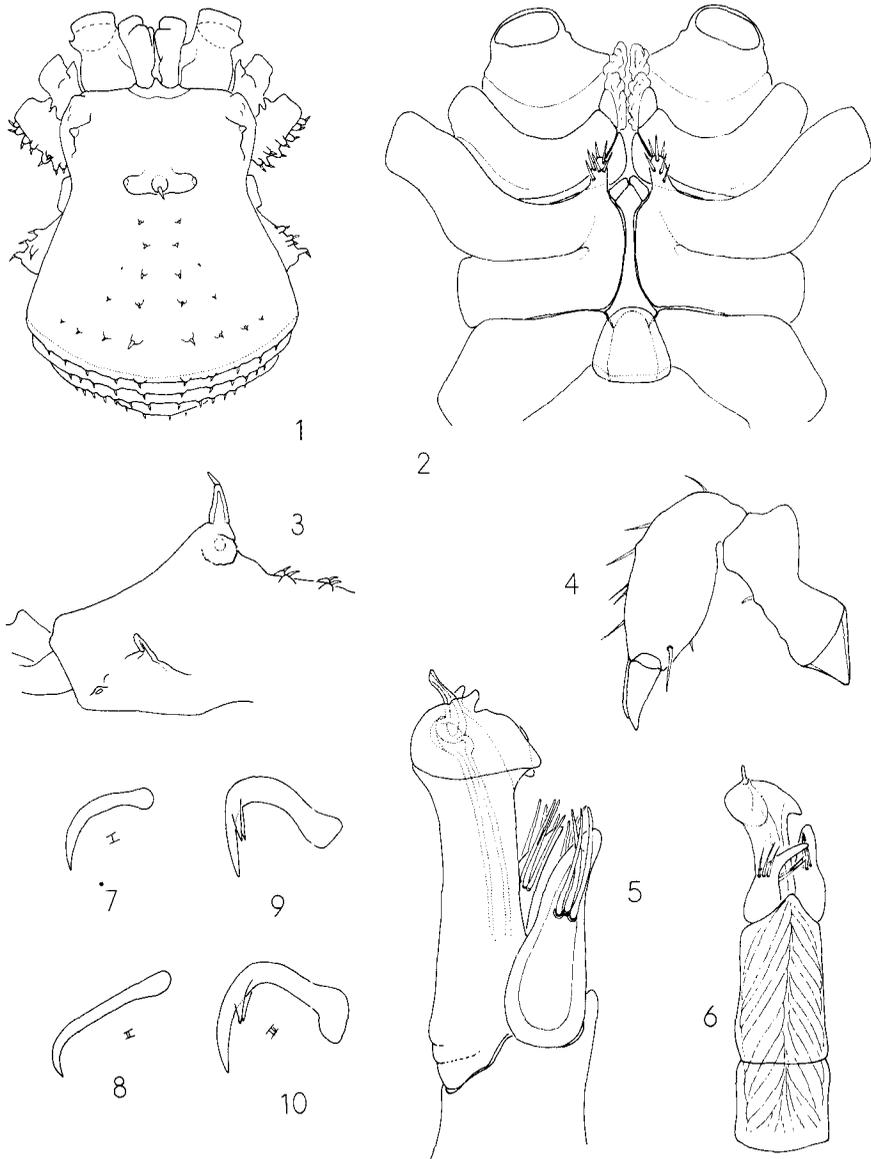
Fumontana deprehendor, n. sp.

Figs. 1-16

Type specimens.—Male holotype from Greenbrier Cove, Great Smoky Mountains National Park, Sevier Co., Tennessee, collected 17 September 1953 by Henry Dybas, deposited in Chicago Natural History Museum. Female paratype from Greenbrier Cove, along Porter's Creek, near its mouth, from litter sample in *Rhododendron* thicket, 1680 ft. elev., collected 23 June 1975 by W. A. Shear and F. A. Coyle, deposited in American Museum of Natural History. The specific epithet is a Latin noun in apposition, meaning “one who takes by surprise.”

Description.—Male holotype. Scute 1.46 mm long, 1.28 mm wide at posterior margin. Large spines above and behind anterior lateral angles (Fig. 1), ozopores not visible in dorsal view. Anterior cephalic portion sloping steeply up to eye tubercle (Fig. 3), eye tubercle wider than long (0.34 mm wide), tipped with tubercle bearing strong spine; lenses of eyes nearly obsolete, no corneal pigment visible. Five dorsal areas demarked by pairs or rows of spined tubercles: five rows of 2, 2, 4, 4, and 8 tubercles anterior to posterior (Fig. 1). Free abdominal tergites margined with rows of spined tubercles. Cuticle of scute slightly rugose. Venter: Pedipalp coxae with small endites; leg I coxae similar. Legs II and III with coxae proximally completely fused, endite of coxa II enlarged, projecting anteriorly, setose (Fig. 2). Coxae IV normal, not meeting anterior to gonostome. Sternum long, narrow, hastate. Chelicerae with first segment 0.51 mm long, 0.21 mm wide, markedly depressed in middle, with apical swelling (Fig. 4); second segment 0.49 mm long to base of movable finger, 0.26 mm wide; fingers with blunt, irregular teeth. Palpus (Fig. 11): Trochanter subglobular, with three ventral spined tubercles; femur 1.19 mm long, 0.51 mm wide; patella sharply elbowed, 0.68 mm long, 0.26 mm wide; tibia 0.77 mm long, 0.26 mm wide; tarsus much flattened, 0.81 mm long, 0.19 mm wide, with large apical claw. Spined tubercles of all palpal segments as shown in Fig.

11. Legs: Leg I with femur bearing spined tubercles twice as long as width of segment, similar tubercles reduced on distal segments (Fig. 13). Leg II (Fig. 14) similar to leg I, but tubercles of femur shorter. Leg III (Fig. 15) with spined tubercles further reduced, astragalus with large spined tubercle dorsally overhanging calcaneus. Leg IV (Fig. 16) with femur slightly sigmoid, small spined tubercles on dorsal side, ventral side slightly and



Figs. 1-10.—Anatomy of *Fumontana deprehendor*: 1, body of male, dorsal view; 2, anterior ventral region of male, ventral view (semidiagrammatic, setae and spined tubercles omitted); 3, anterior part of body of male, lateral view; 4, chelicera of female, lateral view; 5, penis, lateral view; 6, penis, subventral view; 7-10, claws of legs: 7, leg I; 8, leg II; 9, leg III; 10, leg IV.

regularly regose, astragalus as in leg III. Claws of legs I-IV as in Figs. 7-10 respectively. Measurements of legs as follows:

	I	II	III	IV
trochanter	0.21	0.26	0.21	0.26
femur	0.94	1.15	0.89	1.15
patella	0.43	0.55	0.38	0.43
tibia	0.64	0.98	0.77	1.02
astragalus	0.60	0.81	0.94	1.29
calcaneus	0.09	0.09	0.06	0.04
tarsus	0.38	0.77	0.38	0.38

Penis (Figs. 5, 6) with articulated setose lobes on ventral plate, glans apically expanded, seminal canal ending in embolus-like spine. Color translucent yellow-orange overall.

Female paratype. Scute 1.20 mm long, 1.05 mm wide, eye tubercle 0.28 mm wide. Structure as in male except as follows. Coxae II and III not basally fused, endite of coxa II not enlarged. Chelicerae with basal article 0.36 mm long, 0.18 mm wide, second article 0.43 mm long, 0.17 mm wide. Pedipalps much smaller proportionally than in male, femur 0.77 mm long, 0.30 mm wide, patella 0.46 mm long, 0.17 mm wide, tibia 0.51 mm long, 0.20 mm wide, tarsus 0.51 mm long, 0.09 mm wide (Fig. 12). Legs as in male, but distodorsal spined tubercle of astragalus overhangs calcaneus on all legs; calcaneus of leg IV virtually absent. Leg measurements as follows:

	I	II	III	IV
trochanter	0.17	0.20	0.17	0.26
femur	0.72	0.85	0.68	0.94
patella	0.34	0.43	0.30	0.38
tibia	0.48	0.72	0.68	0.79
astragalus	0.47	0.64	0.68	0.79
calcaneus	0.06	0.07	0.04	virtually absent
tarsus	0.34	0.68	0.34	0.34

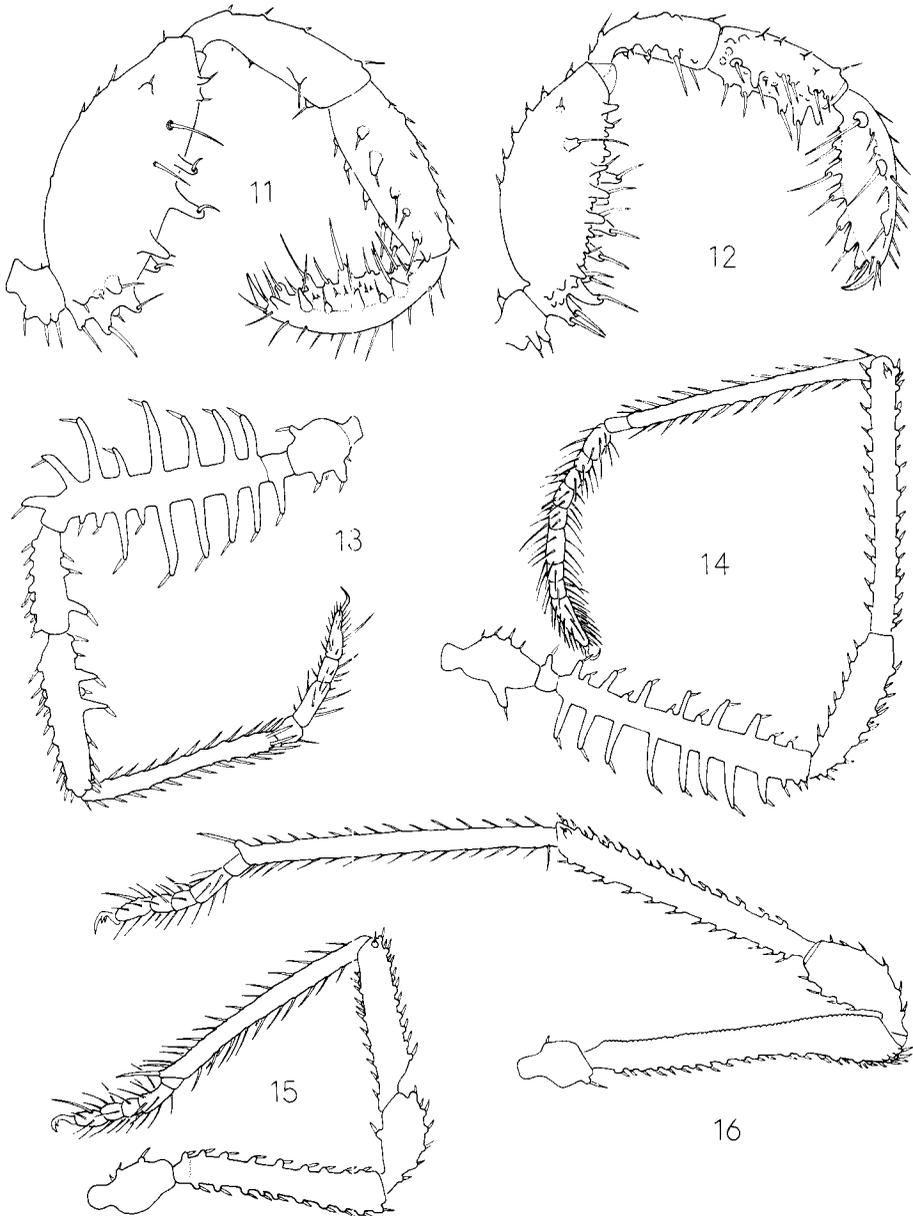
Ovipositor typical of family. Color yellow, paler than in male.

Notes.—The ecology of the type locality has already been discussed.

The relationships of this remarkable animal are obscure. Briggs (1971b), in a revision of the North American triaenonychids, did not mention the fusion in males of coxae II and III; I examined males of *Sclerobunus robustus* from Colorado and found the ventral complex essentially as in *Fumontana deprehendor*. The enlarged endites of the second coxae are also found in some phalangodids and erebomastriids; they possibly serve as guides for the penis during copulation. The position and form of the eye tubercle and the presence on the scute of anteriolateral spines relates *F. deprehendor* to southern hemisphere triaenonychids, as does the ornamentation of the legs. The anatomy of the male genitalia is also very much unlike the western North American forms, and close to that of members of the South African genus *Monomontia* (Kauri, 1961) and the New Zealand genus *Hendea* (Forster, 1954, 1965). The genera *Pristobunus* and *Cenefia*, also from New Zealand (Forster, 1954), have members with legs as in *F. deprehendor*, though much shorter and stouter. Very slight but similar leg modifications are found in members of the North American genus *Cyptobunus* (Briggs 1971b), which I have not seen. On the other hand, none of the South African and New Zealand species are reported to have coxae II

and III fused in males.

Thus it would appear that as in several other Appalachian opilionids, *F. deprehendor* is an ancient relict, bridging gaps between traditional groups, and suggesting a wide precontinental drift distribution of its family.



Figs. 11-16.—Anatomy of *Fumontana deprehendor*: 11, palpus of male, mesal view; 12, palpus of female, mesal view; 13-16, legs of male: 13, leg I; 14, leg II; 15, leg III; 16, leg IV.

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