FIELDIANA
Zoology

Published by Field Museum of Natural History

Volume 65, No. 1 December, 1973

A New Genus and Species of Quill Mites (Acarina: Syringophilidae) from *Colinus virginianus* (Galliformes: Phasianidae) With Notes on Developmental Chaetotaxy

JOHN B. KETHLEY
ASSISTANT CURATOR, DIVISION OF INSECTS
FIELD MUSEUM OF NATURAL HISTORY

Introduction

The cheyletoid family Syringophilidae Lavoipierre, 1953, includes 17 described genera known to parasitize ten orders of birds (Kethley, 1970). For the most part, the genera appear to be specific at the ordinal level of avian host. The adaptive strategy of quill mites to exploit the volume of the quill has resulted in a restriction of mite species to specific feather tracts (Kethley, 1971). Consequently, it is possible to find two or more different quill mite species, usually representing different genera, parasitizing the same host individual.

At present, two or more syringophilid genera per host order are only known for three bird orders (Charadriiformes, Columbiformes, Passeriformes). A new genus and species from *Colinus virginianus*, described below, represents the second syringophilid genus from a galliform host.

The terminology employed in the description follows that used in a former paper (Kethley, 1970). All measurements are in microns.

US – ISSN 0015-0754
Library of Congress Catalog Card No. 73-91068

Publication 1176

Colinophilus, new genus

Species of *Colinophilus* may be distinguished from all other species of Syringophilidae by the presence of *vs'* II, having setae *l*2, *d*3 in a longitudinal row, and the presence of lateral hypostomal teeth. This new genus appears most similar to *Stibarokris*, but is also closely related to *Syringonomus*. These large-sized mites (800-1,100μ) are found in the primaries of galliform birds of the family Phasianidae. The name *Colinophilus* means lover of colinus.

Type species.—*Colinophilus wilsoni*, new species, *ex. Colinus virginianus* (L.), Phasianidae, Galliformes.

FEMALE. (1). Hypostomal apex slightly ornamented. (2). Lateral hypostomal teeth present. (3). Cheliceral digit with 2-3 teeth. (4). Peritreme M shaped; lateral branches each with 9-10 chambers; each longitudinal branch with 16-18 chambers. (5). Stylophore constructed posteriorly, extending beneath prodorsal sclerite. (6). Palpal tibiotarsus rounded on distal margin. (7). Setae *vi, ve, sci, l*1, *d*1, *l*2, *l*3, *d*3 weakly knobbed (fig. 3J); other setae smooth. (8). Prodorsal sclerite weakly sclerotized, margins indistinct; entire, rectangular in shape. (9). Weak hysterosomal sclerite present. (10). Setal pattern of propodosomal region with six pairs of setae arranged 2-2-2. (11). Setae *l*2, *d*3, *l*3 long; *d*3 closer to *l*2 than to *l*3. (12). Setae *d*4, *l*4 long, *d*4 3/4 length of *l*4; *d*5, *l*5 short. (13). Genital series with two pairs of setae; anal series with two pairs of setae. (14). Paragenital series with three pairs of setae. (15). *MCA*1 weakly divergent to sub-parallel, fused to *MCA*2 indistinctly. (16). Coxae III-IV weakly sclerotized, margins indistinct. (17). Cuticular striations as in Figures 1 and 2. (18). Legs I slightly thicker than II; legs II subequal in thickness to III-IV. (19). Legs with full compliment of setae. (20). Setae *a'* and *a''* multiserrate; 10-12 tines. (21) Antaxial and paraxial members of claw pair subequal; claws one-fourth of empodium. (22). Order of hosts: Galliformes. (23). Types of feathers inhabit: primaries.

MALE. As in female except: (2). Lateral hypostomal teeth absent. (3). Cheliceral digits edentate. (7). All setae smooth. (10). Setal pattern of propodosomal region arranged 2-2-1-1. (11). Setae *l*3, *d*3 short. (12). Setae *d*4 short. (17). Cuticular striations as in Figure 4.

Colinophilus wilsoni new species. Figures 1–4.

FEMALE (holotype). Length 1,097μ; width 312μ, *Gnathosoma*: Hypostomal apices fleshy, hyaline lobes, unornamented, with smooth margins. Lateral hypostomal apodemes (teeth) present (fig. 3A) with greatest development ventrad; setae *ao*1, *ao*2 subequal in length, extending to margin of hypostomal apices. Length of stylophore 355. Peritremes (fig. 3B), each lateral branch with 9-10 chambers; each longitudinal branch with 16-18 chambers. *Dorsal idiosoma*: Propodosomal sclerite not divided, rectangular in outline, bearing setae *vi, ve, sci, d*1, *l*1; ratios of *vi*:*ve*:*sci*:*sce*, 1:1 1/2:2:2; *d*1, *l*1, *sci* subequal in length; distance between setal bases–*vi* to *ve* 29, *vi* to *sci* 90, *vi* to *sce* 103, *vi* to *l*1 166, *vi* to *d*1 166, *vi* to *vi* 120, *ve* to *ve* 142, *sci* to *sci* 154, *sce* to *sce* 142, *l*1 to *l*1 107, *d*1 to *d*1 34. Weak hysterosomal sclerite present, extremely weak in young females, bearing *l*2, *d*3, *l*3, *d*4, *d*5; *l*2, *d* 3, *l*3 each 1.72 time length of *vi*; ratios of *d*4; *l*4; *d*5; *l*5,

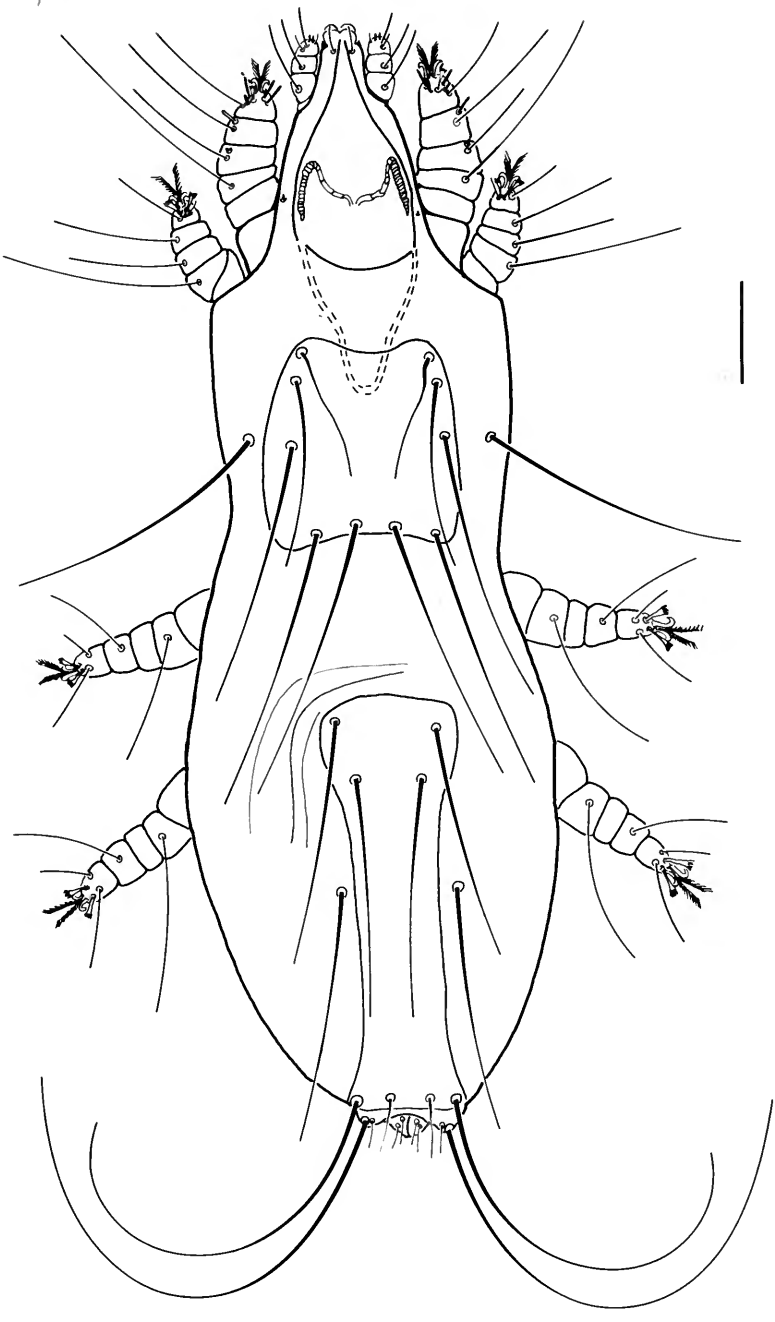

FIG. 1. *Colinophilus wilsoni*, n. sp. Female, dorsal aspect. Line scale equals 100μ.

8:14:2:1; *d*4 three times length of *vi;* distance between setal bases–*l*2 to *d*3 56, *l*2 to *l*3 166, *d*3 to *l*3 110, *l*2 to *l*2 81, *d*3 to *d*3 61, *l*3 to *l*3 123. *Ventral idiosoma:* As in Figure 2. Legs: Solenidia *sigma, phi, omega* of leg I as in Figure 3E, F, G; setae *dF, dG, dT* of legs I and II smooth, *dG*I shorter than *dT*I, *dG*II shorter than *dT*II; *a'* and *a"* I-IV each with 10-12 tines, *a'*I 1/2 length of *a"*I (fig. 3C, H, I); 3*b*, 4*b* subequal, 1/2 length of respective coxae, 3*c* three times length of 3*b*, extending to base of 4*c*, 4*c* longer than 3*c*; *sc*3, *sc*4 subequal, extending to distal margin of respective tibiae; *vF*II extending to tip of empodium; *tc'*III, *tc'*IV subequal, each 1/2 length of *tc"* III, *tc"* IV.

MALE (paratype). As in female except: Length 843; width 282, *Gnathosoma*: Hypostomal apices unornamented; length of stylophore 295. *Dorsal idiosoma*: Propodosomal sclerite bearing setae *vi, ve, sci, d*1; ratios of *vi:ve:sci:sce*, 1:1.4:1.2:1.2; *d*1, *l*1 subequal, 1.5 times length of *vi*; hysterosomal sclerite absent, *l*2 0.85 length of *vi*; *d*3, *l*3, subequal, 0.30 length of *vi*; ratios of *d*4:*l*4:*al*:*gl*, 4:19:2:1; *d*4 0.30 times length of *vi*; ratios of *pgl*:*pg*2:*pg*3, 1.5:1:1.25, *pgl* slightly shorter (0.92) than *vi*. *Ventral idiosoma* and aedeagus: As in Figures 4A-D. Legs: Setae 3*b*, 4*b* subequal to length of respective coxae, 4*c* shorter than 3*c*; *sc*3, *sc*4 extending at most to basal half of respective tibiae; *tc'*III, *tc'*IV subequal, each .33 times length of *tc"*III, *tc"*IV.

Type material.–From the primary flight feathers of *Colinus virginianus* (L.), Phasianidae: holotype female, 9 female paratypes, 3 male paratypes, Tall Timbers Research Station, Leon County, Florida; Feb. 8, 1971, F. E. Kellog leg.

Additional material.–From primary number 6 of *Colinus virginianus*, 2 females, Graves County, Kentucky, Nov. 28, 1969, T. Peterle leg.

The holotype, one male paratype, and two determined females are in the collections of Field Museum of Natural History; two paratypes (one male, one female) each to be deposited with the United States National Museum, Washington, D. C. and the British Museum (Natural History), London; one female paratype in each of the following collections; The Acarology Collection, Department of Entomology, University of Georgia, Athens; the Institute of Acarology, Ohio State University, Columbus; the remaining four paratype females, larvae and nymphs in the author's collection.

DEVELOPMENT CHAETOTAXY

The developmental stages of *Colinophilus wilsoni* are typical for the family, comprising the egg, larva, and two nymphal stages prior to the adult. The deutonymphal stage is apparently absent in all known syringophilids. A complete series of immatures leading to the adult female of *C. wilsoni* was observed. The developmental pattern of the leg setation of *C. wilsoni* exactly parallels that of *Syringophilus bipectinatus* Heller, 1880 (Kethley, 1970).

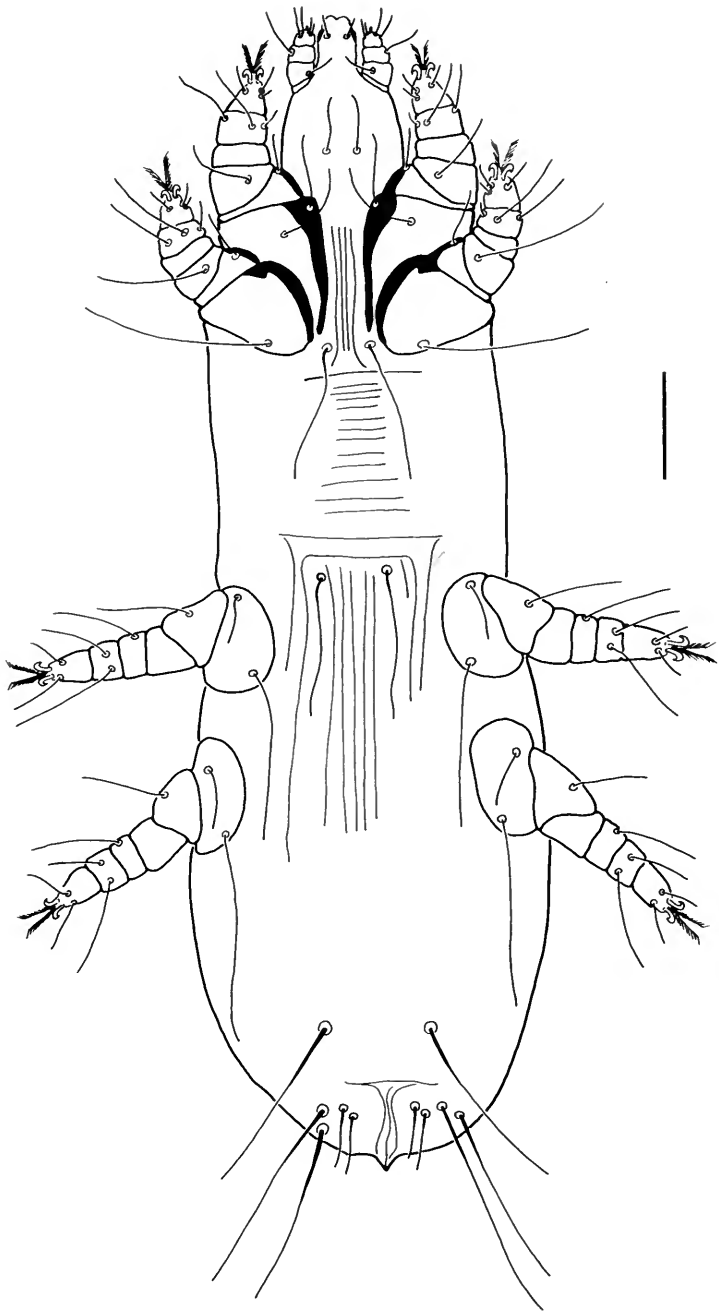

FIG. 2. *Colinophilus wilsoni*, n. sp. Female, ventral aspect. Line scale equals 100μ.

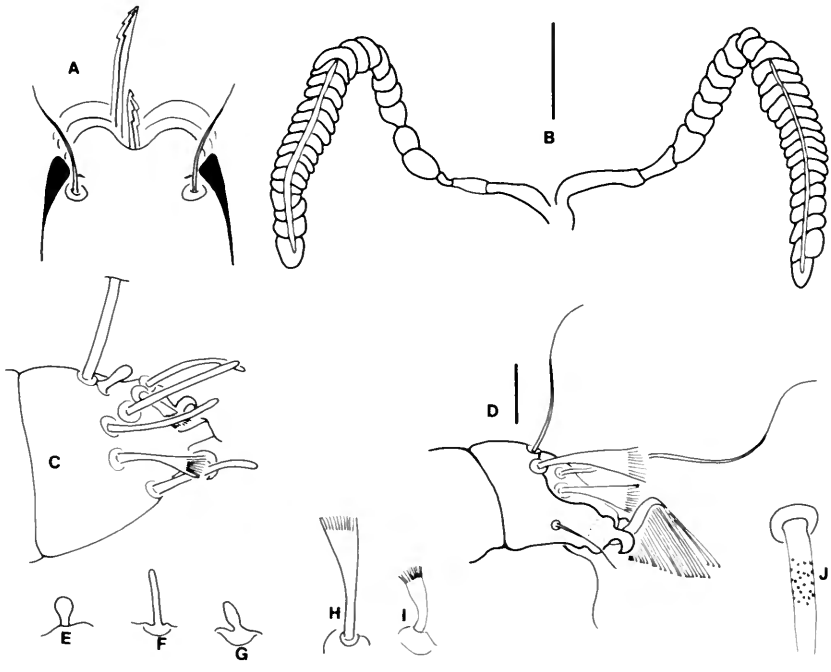

FIG. 3. *Colinophilus wilsoni*, new species. Female, **A**, hypostomal region, ventral aspect; **B**, peritreme; **C**, tarsus I, dorsal aspect; **D**, tarsus IV, antaxial, lateral aspect; **E**, *sigma*, lateral aspect; **F**, *phi*, lateral aspect; **G**, *omega*, tarsus I, lateral aspect; **H**, *a'*, tarsus I, lateral aspect; **I**, *a''*, tarsus I, lateral aspect; **J**, detail of idiosomal seta. Line scale equals 20μ each–upper scale applies to A–C and E–J, lower scale applies to D.

A description of the developmental chaetotactic pattern for the opisthosomal region has not been given for any syringophilid species. All ambulatory stages of *C. wilsoni* possess setae *l*2, *l*3, *d*3. In addition to these dorsal setae, the larva possesses *l*4, *l*5, *d*5 in the dorsal series; *a*1 in the anal series; *g*1 in the genital series; no setae are present in the paragenital series. In the protonymph, *a*2 is added to the anals and *pg*1 to the paragenitals. The dorsal series is completed in the tritonymph with the addition of *d*5, and a second pair (*pg*3) is added to the paragenital series. The adult female differs from the tritonymph in the presence of *pg*2 and *g*2. Although a male tritonymph was not present in the series examined, representatives of the following transitional stages were observed: a larva containing a fully developed protonymph within the larval cuticle, a protonymph containing a fully developed female tritonymph within the protonymphal cuticle, and female

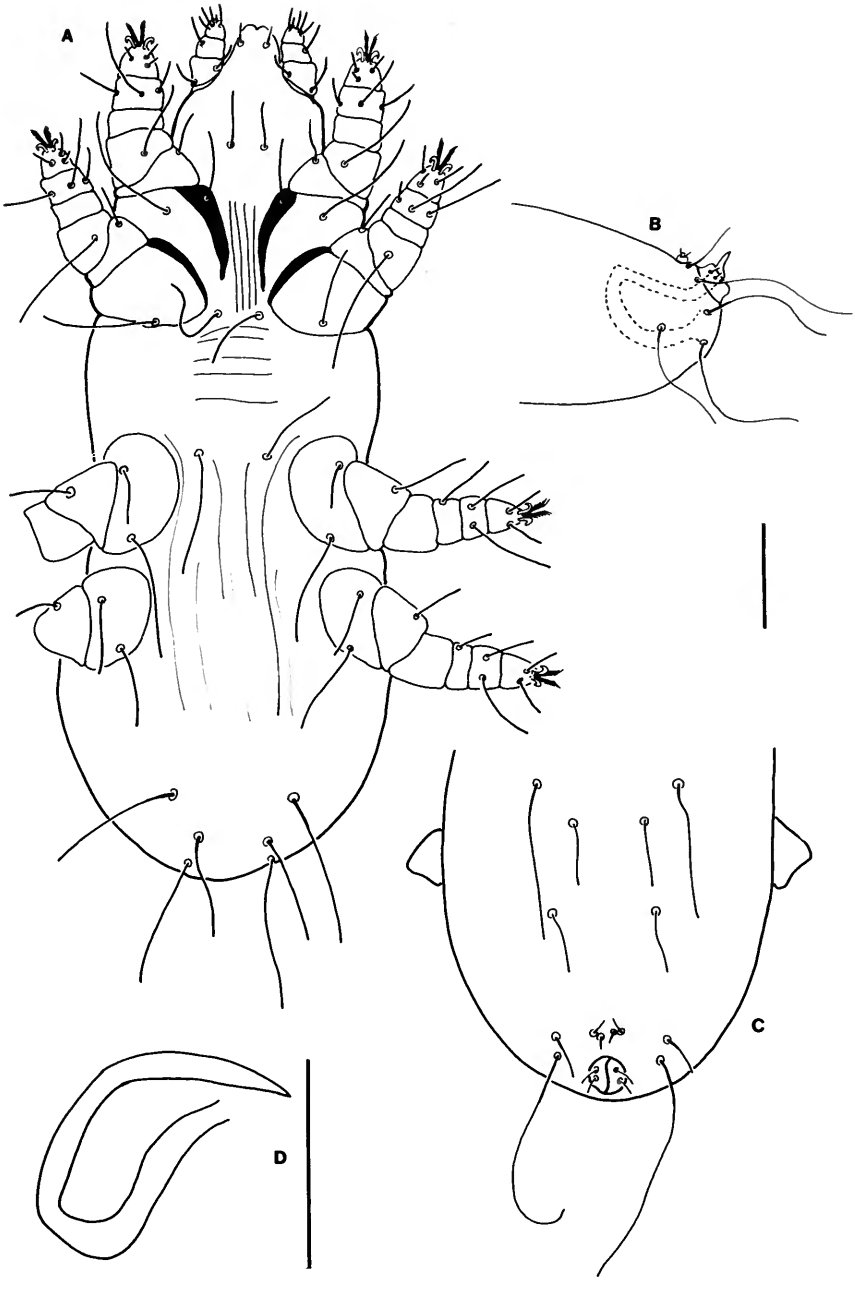

FIG. 4. *Colinophilus wilsoni*, new species. Male, A, ventral aspect; B, opisthosoma, lateral aspect; C, opisthosoma, dorsal aspect; D, aedeagus, lateral aspect. Line scale equals 100μ each–upper scale applies to A–C, lower scale applies to D.

tritonymph containing a fully developed adult female within the tritonymph cuticle.

ACKNOWLEDGMENTS

I wish to express my sincere appreciation to Nixon Wilson, University of Northern Iowa, Cedar Falls, for providing host material yielding the type series and to Tony Peterle, Ohio State University, Columbus, for providing additional material from the type host.

REFERENCES

KETHLEY, J. B.

1970. A revision of the family Syringophilidae (Prostigmata: Acarina). Contrib. Amer. Entomol. Inst., 5(6), pp. 1-76.

1971. Population regulation in quill mites (Acarina: Syringophilidae). Ecology, 52(6), pp. 1113-1118.