

June 1986

A New Species of Mite (Acari: Podapolipidae) From a Michigan Carabid Beetle, *Chlaenius Pennsylvanicus*

Robert W. Husband
Adrian College

Cheryl D. Swihart
Adrian College

Follow this and additional works at: <https://scholar.valpo.edu/tgle>



Part of the [Entomology Commons](#)

Recommended Citation

Husband, Robert W. and Swihart, Cheryl D. 1986. "A New Species of Mite (Acari: Podapolipidae) From a Michigan Carabid Beetle, *Chlaenius Pennsylvanicus*," *The Great Lakes Entomologist*, vol 19 (2)
DOI: <https://doi.org/10.22543/0090-0222.1566>
Available at: <https://scholar.valpo.edu/tgle/vol19/iss2/11>

This Peer-Review Article is brought to you for free and open access by the Department of Biology at ValpoScholar. It has been accepted for inclusion in *The Great Lakes Entomologist* by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.

A NEW SPECIES OF MITE (ACARI: PODAPOLIPIDAE) FROM A MICHIGAN CARABID BEETLE, *CHLAENIUS PENNSYLVANICUS*

Robert W. Husband and Cheryl D. Swihart¹

ABSTRACT

Eutarsopolipus regenfussi n. sp. is described from the Michigan carabid beetle, *Chlaenius pennsylvanicus* (L.).

Regenfuss (1968) fully defined the genus *Eutarsopolipus* and described many European species. The purpose of this paper is to describe a third North American species of *Eutarsopolipus*, *Eutarsopolipus regenfussi*, removed from *Chlaenius pennsylvanicus* (L.) (Coleoptera: Carabidae) collected near Douglas Lake at the University of Michigan Biological Station. The species is named for the late Hans Regenfuss in tribute to his detailed studies of Podapolipidae.

Measurements were taken with the aid of a Wild phase-contrast microscope with a drawing tube calibrated with a stage micrometer. All measurements are in micrometers. Terminology is based on Lindquist (1976, 1977). The most representative measurements of the best mounted specimens were chosen, rather than averages of all mites.

Eutarsopolipus regenfussi new species

Female (Figs. 1, 2). Gnathosoma longer than wide, length 50, width 43. Palps 10; stylets smooth 42–45. Stigmata on stout stalks dorsolateral to base of gnathosoma.

Idiosoma oval, length 269–329, width 167–216. Plate C length 40–60, width 165–257; plate D length 50–60, width 153–195; plate EF length 60, width 130–210. Setae h_2 12. Setae h_2 1/2 length of setae sc_2 . Plate C width vs. length ratio is about 4:1.

Legs. Leg I with hook-like terminal claw: setal number formula (FGTT) 2078. Setae tc' and tc'' 12, ω and Φ 6. Leg II setal formula 0046, leg III 0045.

Male (Figs. 3, 4). Gnathosoma length 30, width 30; dorsal gnathosomal setae 12 (bent), ventral setae 2. Palps 12, stylets 22.

Idiosoma. Length 136, width 99. Prodorsal plate semicircular, setae v_1 , v_2 microsetae, sc_2 32. Setae c_1 , c_2 , d and e all very short—no longer than the width of setal socket. Aedeagus posterior. Genital capusle length 24, width at base 20, distal width 10.

Venter with apodemes 1 and 2 and sternal apodeme well developed. Coxae III fused. Coxae 1, 2 with very short setae. Coxal plate 3 with setae 3b twice length of setae 3a.

Legs. Tarsus I with a single ventro-terminal spine. Solenidion omega I 4, II 4, solenidion phi 5, less than 1/3 width of tibia I. Tarsi II, III with 2 terminal stout spine-like setae. Claws much reduced. Setal number formula as in female.

Larval female (Figs. 5, 6). Gnathosoma length 37, width 38, dorsal gnathosomal setae 19, ventral setae no longer than width of setal socket, palps two-segmented, distal segment with a ventral sclerotized structure. Stylets smooth 24–29.

Idiosoma length 137–151, width 98–118. Prodorsal plate semicircular, setae v_1 , v_2 3, sc_2 more than 40. Plates C,D fused mesally, all setae short. Plate EF with a single pair of setae. Plate H oval, h_1 25, h_2 more than 75.

¹ Biology Department, Adrian College, Adrian, MI 49221.

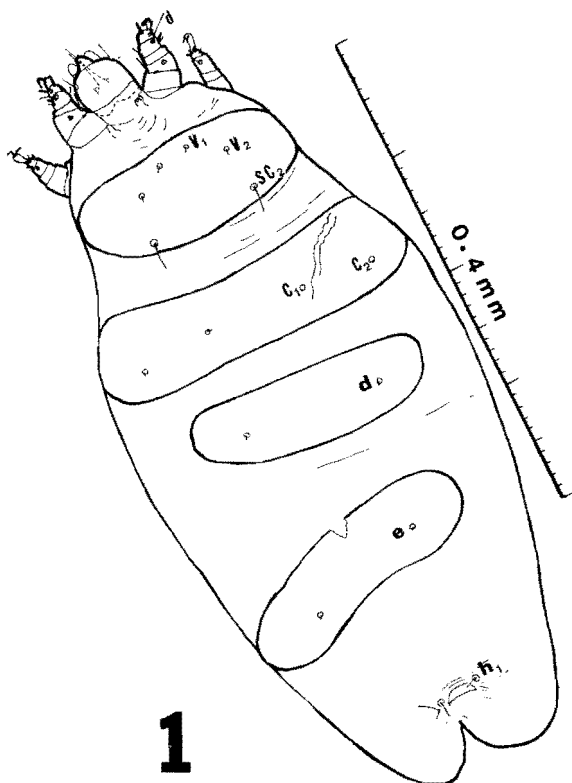


Fig. 1. *Eutarsopolipus regenjussi* n. sp., adult female, dorsal aspect.

Legs. Leg I with two parallel, terminal claws, solenidion omega I 4. II. 4: phi 4. tc' and tc'' 9. Leg II, III claws small and slender. Venter with apodemes 1 and 2 and sternal apodeme well developed, 1a and 2a no longer than width of setal socket: setae 3a 2/3 length of 3b.

Type data: Holotype adult female: U.S.A., Michigan, Cheboygan Co., University of Michigan Biological Station on Douglas Lake, collected under elytra of *Chaenius pennsylvanicus* (L.) collected by P. W. Fattig 6 August 1915. Deposited in the R. W. Fattig Museum, University of Georgia, Athens, GA (RWH7385-1).

Paratypes (three males, three females, seven larval females, three eggs). Adult female (RWH3-7385-2), male (RWH3-7385-1), and larval female (RWH2-7385-1), and two eggs (RWH7385-5, RWH7385-6) to the collection at Adrian College, Adrian Michigan. Adult female (RWH7385-7) in Zoologisches Museum, University of Hamburg, Hamburg, West Germany. Male (RWH7385-2), larval females (RWH7385-4, RWH2-7385-2), and eggs (RWH3-7385-4) in the P. W. Fattig Museum, University of Georgia, Athens, Georgia. Male (RWH7385-3), larval females (RWH3-7383-3, RWH2-7385-3) to the Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

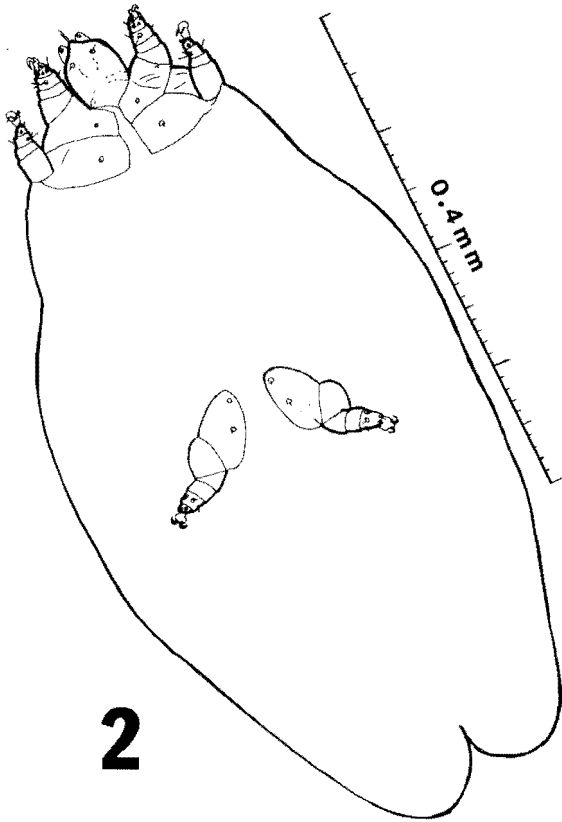


Fig. 2. *Eutarsopolipus regenfussi* n. sp., adult female, ventral aspect.

DIAGNOSIS OF SPECIES

Species characters are based in part on those used by Regenfuss (1968, 1974). Adult female *E. regenfussi* resemble *E. inermis* in length of cheliceral stylets, in having one plate C and in plate C width to length ratio greater than 3:1. *E. regenfussi* resembles *E. latus* in having plate EF wider than 150 μ m, leg I claw well developed, conspicuous h_1 setae and in a shorter distance between setae v_1-v_1 than between v_1-v_2 .

The genital capsule of the male *E. regenfussi* is similar to that of *E. latus*. Both have basal width to distal width proportions of 2:1 in contrast to the 3:2 ratio in the genital capsule of *E. inermis*. Setae c_1 are closer together in *E. regenfussi* than in *E. inermis* or *E. latus*. In larval female *E. regenfussi*, setae v_1 are further apart than setae sc_2 in contrast to *E. latus* and *E. inermis*. Setae d are further apart than setae v_1 or e in contrast to *E. latus* in which distances between setae v_1 , d and e are equal.

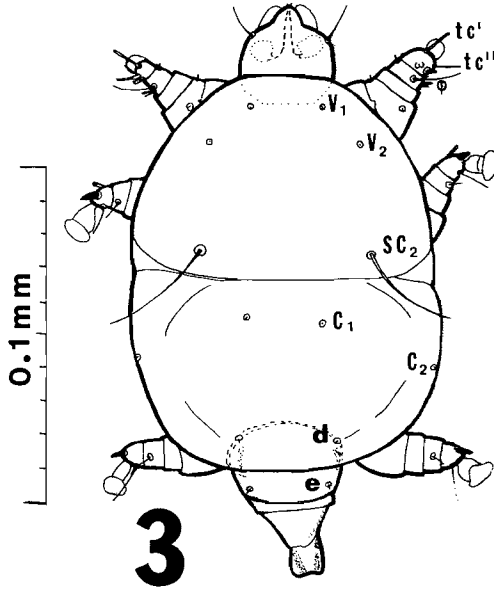


Fig. 3. *Eutarsopolipus regenfussi* n. sp., male, dorsal aspect.

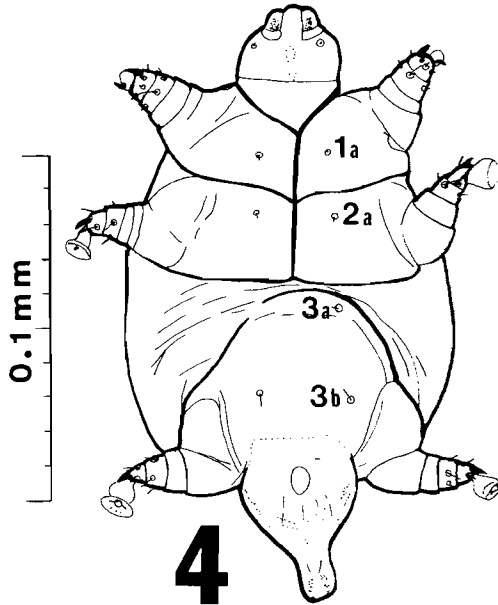


Fig. 4. *Eutarsopolipus regenfussi* n. sp., male, ventral aspect.

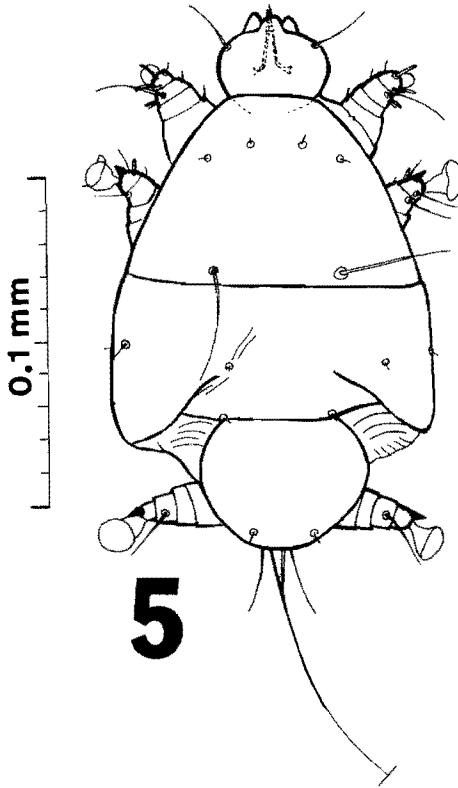


Fig. 5. *Eutarsopolipus regenfussi* n. sp., larval female, dorsal aspect.

DISCUSSION

All stages of all potential species of North American *Eutarsopolipus* are not represented as they are in *E. regenfussi*. It is difficult to distinguish some species of *Dorsipes* and *Eutarsopolipus* by using larval and adult female characteristics. We have records of *Eutarsopolipus* and *Dorsipes* from more than 12 species of North American Carabidae and continue to look at additional specimens of these and other host species to get adequate representation before descriptions are made.

Regenfuss (1968, 1973, 1974) reviewed the family Podapolipidae and dealt with *Eutarsopolipus* and *Dorsipes* in considerable detail. A high degree of host specificity appears in many *Eutarsopolipus* and this may be related to dispersal of mites during copulation by the beetles. Mites are reproductively isolated on different hosts and on different parts of the same host (Regenfuss 1972). In our limited studies it is not yet apparent if *Eutarsopolipus* from several species of *Chlaenius* beetles share more characters than *Eutarsopolipus* from two species of *Evarthrus*. Claw and setae h_2 development in *Eutarsopolipus* from *Chlaenius* and lack of development in mites from *Evarthrus* suggest a divergence of mite species on host species in these two genera. At present, *Eutarsopolipus* from North America are not known as well as *Eutarsopolipus*

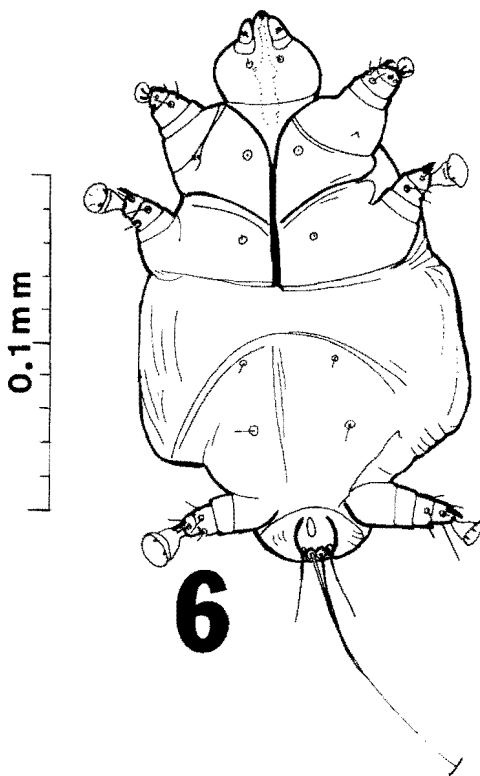


Fig. 6. *Eutarsopolipus regenfussi* n. sp., larval female, ventral aspect.

from Central Europe are and the types of comparisons made by Regenfuss (1968) cannot be made for North American species.

ACKNOWLEDGMENTS

We are very grateful to the following specialists for making *Eutarsopolipus* specimens available: P. Hunter and W. T. Atyeo, University of Georgia, Athens; E. Lindquist, Ottawa, Canada; G. Eickwort, Cornell University, New York; P. A. Nickel and R. J. Elzinga of Kansas State University; M. O'Brien and B. O'Connor of the University of Michigan Museum of Zoology; G. Dunn of Michigan State University; G. Rack of the University of Hamburg, W. Germany; and M. Huybensz, formerly of Cornell University, New York.

LITERATURE CITED

Husband, Robert W. 1974. *Ovacarus peeleei*, a new species of mite (Acarina: Podapolipidae) associated with the carabid *Pasimachus elongatus*. Great Lakes Entomol. 7:1-7.

- Lindquist, E. E. 1976. Transfer of the Tarsocheylidae to the Heterostigmata and reassignment of the Tarsonemina and Heterostigmata to lower hierarchic status in the Prostigmata (Acari). *Canadian Entomol.* 108:23-48.
- . 1977. Homology of dorsal opisthosomal plates, setae and cupules of heterostigmatid mites with those of other eleutherengone Prostigmata (Acari). *Acarologia* 19:97-104.
- Regenfuss, H. 1968. Untersuchungen zur Morphologie, Systematik und Ökologie der Podapolipidae (Acarina, Tarsonemini). *Z. wiss. Zool.*, 177:183-282.
- . 1972. Über die Einnischung synhospitaler Parasitenarten auf dem Wirtskörper. *Z. zool. Syst. Evolutionsforsch.*, 10:44-65.
- . 1973. Beinreduktion und Verlagerung des Kopulationsapparates in der Milbenfamilie Podapolipidae, ein Beispiel für verhaltensgesteuerte Evolution morphologischer Strukturen. *Z. zool. Syst. Evolutionsforsch.*, 11:173-195.
- . 1974. Neue ektoparasitische Arten der Familie Podapolipidae (Acari: Tarsonemina) von Carabiden. *Mitt. Hamburg Zool. Mus. Inst.*, 71:147-163.
- Stannard, L. J. and S. M. Vaishampayan. 1971. *Ovacarus clivinae*, New genus and species (Acarina: Podapolipidae), an endoparasite of the Slender Seedcorn Beetle. *Ann. Entomol. Soc. Amer.* 64:887-890.