

THREE NEW HYPOPIAL NYMPHS
(Acari : Acaridae)
PHORETIC ON FLEAS PARASITIC ON RODENTS
IN CALIFORNIA, USA*

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Introduction

The phoretic association of hypopi (heteromorphic deutonymphs) of some Acaridid mites on fleas is well documented but poorly understood. The significance of this interesting ecological relationship, other than mite dispersal, remains to be demonstrated. From September 1980 to June 1983 approximately 15,000 fleas were examined for phoretic mites during surveillance activities for plague in California. Hypopi were observed most frequently on fleas parasitizing chipmunks (*Eutamias* spp.) and ground squirrels (*Spermophilus* spp.) occurring at higher elevations in the Sierra Nevada and Cascade Mountains (unpublished records). Herein we describe three new species of hypopi belonging to three genera of Acaridae. Fleas were collected by staff of the Vector Biology & Control Branch, California Department of Health Services. All measurements are in microns (μm). Holotypes are deposited in the United States National Museum, Washington, D.C. Paratypes are deposited in the Institut royal des Sciences Naturelles de Belgique and the authors' collections.

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Acarus L. 1758

Acarus monopsyllus sp. n.

Hypopus (Fig. 1, 2, 5-7): Holotype 228 long and 160 wide. Two paratypes are 237 × 156 and 240 × 162. Dorsum: cuticle well sclerotized and pitted. Setae short, comprising *vi* (length 18),

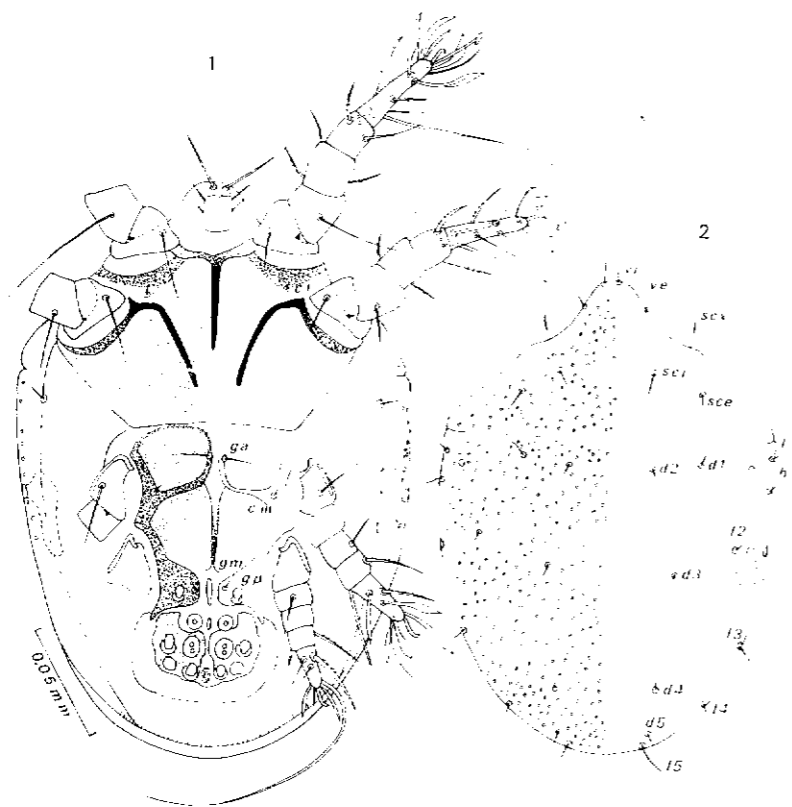


FIG. 1 - 2. — *Acarus monopsyllus* sp. n. Hypopus in ventral (1) and dorsal (2) view.

ve (9), *scx*, *scs* longer (15) than *sce* (12), *d1* to *d5* (12), *l1* to *l4* shorter (12) than *l5* (18) and *b*. Oil gland orifices slightly behind *l2*. Venter: epimeres I fused in a sternum much shorter than epimeres II, the latter not reaching the posterior margin of coxae II. Epimeres III and IV slightly more sclerotized than in

other species of the genus, and form more or less closed coxal fields separated in the midline. Setae *sb* short; *cx I* and *cx III* are microsetae; *gm* thin and short, *ga* longer (15), *gp* are conoids. Palposoma longer (18) than wide (12), bearing two long apical solenidia (length 40) and two pairs of simple setae. Legs: tarsi I-IV 36-30-21-15 long, respectively. Suctorial plate 51 wide. Chaetotaxy of legs: same number of setae as in other species of genus; setae *d* of tarsi IV as long as these tarsi. Solenidiotaxy: tarsus I with $\omega 1$ inflated apically, 15 long; $\omega 3$ 24 long and situated in the middle of the tarsus.

Host and locality: Holotype from *Monopsyllus eumolpi* ♂, ex *Eutamias amoenus*, Hope Valley, Alpine Co., California, U.S.A., 9.IX.1980 (n° V80-2141). Six paratypes from *M. eumolpi* (♀), ex *Eutamias townsendii*, Lassen National Park, Shasta Co., California, 30.IX.1982 (n° V82-2149).

Remarks: This species is distinguished from all other species in the genus by the much shorter *d* setae of tarsi IV. It is most like *Acarus nidicolous* Griffiths, 1970 and *A. avicolus* Fain & Beaucournu, 1972 but is distinguished from them by the more anterior position of setae *ga* and the relatively longer tarsi.

Viedebanttia OUDEMANS, 1929

Viedebanttia diamanus sp. n.

Hypopus (Fig. 3, 4, 8-10): Holotype (flattened) 295 long and 240 wide. One paratype 273 × 210. Dorsum: covered by a punctate shield. In the holotype this shield bears a very faint, irregular network that is absent in the paratype and was probably produced by crushing the specimen. Sejugal furrow very anterior. Setae short. Scapular setae in a straight line, setae *s cx* abnormally long (36), setae *ve* absent. Venter: sternum shorter than epimeres II, the latter short, not reaching the posterior margin of coxae II. Setae *l5* 40 long. Epimeres III and IV short, not fused in the midline. Setae *cx I*, *cx III*, and *gp* are conoids. Suctorial plate 75 wide (lateral membranes not measured). Anterior suckers rounded, 15 wide, posterior suckers longer (15) than wide (11). Oil gland orifices between setae *b* and *sb*. Palposoma 32 long and 12 wide, its apex divided into two fingers bearing a pair of solenidia

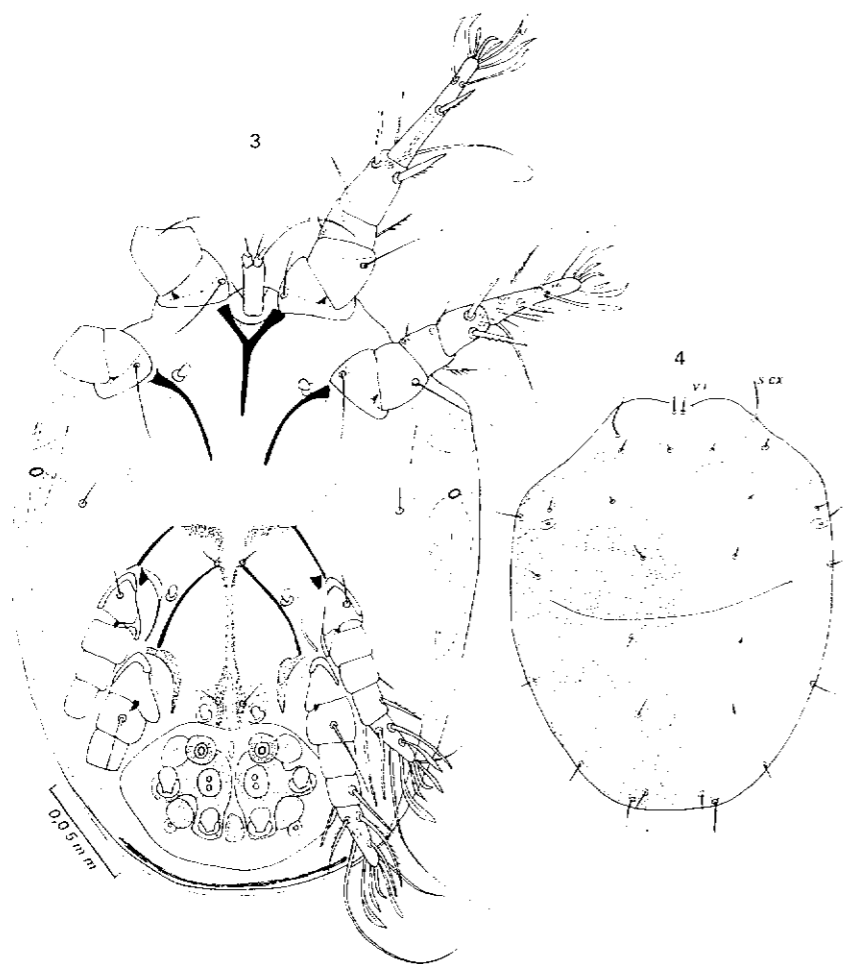


FIG. 3 - 4. — *Viedebantia diamanus* sp. n. Hypopus in ventral (3) and dorsal (4) view.

50 long and a pair of short setae on their base ; base of palposoma with a second pair of short setae. Coxae I and II distinctly punctate, coxae III-IV distinctly punctate only in their anterior and internal regions. Legs long. All tarsi long and narrow. Tarsi I-IV 64-49-28-30 long, respectively. Tibiae I-IV 39-30-15-15 long, respectively. Chaetotaxy of legs : tarsi I-IV with 8-9-8-8 setae, respectively ;

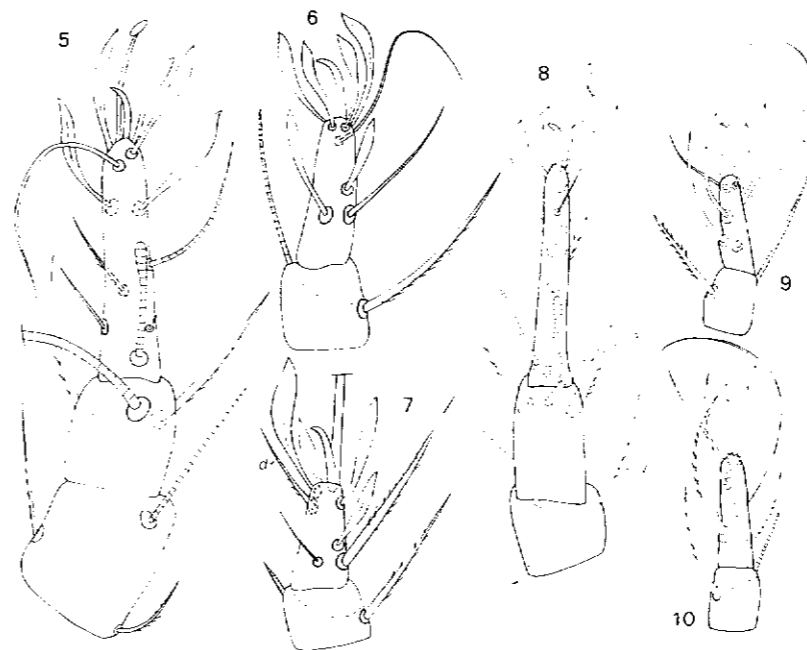


FIG. 5 - 10. — *Acarus monopsyllus* sp. n. Hypopus : apical segments of legs I (5), III (6), and IV (7). *Viedebantia diamanus* sp. n. Hypopus : apical segments of legs I (8), III (9), and IV (10).

tarsi I-II each with 5 foliate and 1 saucer-like setae ; tarsi III-IV with 6 and 5 foliate setae, respectively. Solenidiotaxy : tarsus I with basal ω 1 inflated apically and 24 long ; ω 3 cylindrical, 30 long and very close to base of tarsus ; ω 2 short and proximal to ω 1.

Host and locality : Holotype and one paratype from two *Diamanus montanus* from burrows of *Spermophilus beecheyi*, Vandenberg Air Force Base, Santa Barbara Co., California, U.S.A., 2.IX.1980.

Remarks: Both the genus *Viedebanttia* and its one species, *V. schmitzi* Oudemans, 1929 were based on a single specimen collected from a nest of a mole (*Talpa europaea*) in Nederland. These taxa were described briefly and not figured. We have examined the holotype of *V. schmitzi*, still the only known specimen of that species. It is characterized by the abnormally long anterior tibiae, especially on leg I, the long setae *s cx*, the very short propodotum, and the absence of setae *ve*. All the tarsi are long and narrow. These characters separate *Viedebanttia* from *Rhizoglyphus*, *Caloglyphus*, and the other genera of the Rhizoglyphinae.

Viedebanttia diamanus sp. n. differs from *V. schmitzi* by the following characters: coxae III and IV much less punctate; solenidion $\omega 3$ much closer to $\omega 1$ and much shorter (26 instead of 45 in *V. schmitzi*); setae *vi* longer (22 instead of 5 in *V. schmitzi*); setae *d 1* to *d 5* longer (12 instead of 5); basal setae of palposoma closer to base.

Paraceroglyphus FAIN and BEAUCOURNU, 1973

Paraceroglyphus californicus sp. n.

Hypopus: Holotype 180 long and 120 wide. Seven paratypes are 186 x 135, 185 x 130, 170 x 125, 168 x 120, 167 x 123, 165 x 117, and 163 x 119. Dorsum as in *Paraceroglyphus xenopsylla* Fain & Schwan, 1976 however setae *ve* are present and *sc i* are distinctly anterior to *sc e*. Venter as in *P. xenopsylla* except coxal fields III distinctly separated in the midline (these are contiguous in *P. xenopsylla*). Legs as in *P. xenopsylla* but $\omega 3$ of tarsus I is slightly more apical. Tarsi I-IV 24-20-14-14 long, respectively. External lengths of tarsal claws I-IV 5-5-4-4, respectively. Palposoma longer (15) than wide (10).

Host and locality: Holotype and 11 paratypes from several *Diamanus montanus* ex *Spermophilus lateralis*, Lake Almanor, Plumas Co., California, 7.VI.1983 (n° PLU 49); 4 paratypes from *Oropsylla idahoensis* ex *Spermophilus beldingi*, Lake Almanor, 7.VI.1983 (n° PLU 60); 2 paratypes from *Oropsylla idahoensis* ♀, ex *Eutamias townsendii*, Lassen National Park, Shasta Co., California, 30.IX.1982 (n° V82-2149).

Remarks: This species is distinguished from *Paraceroglyphus xenopsylla* by the presence of setae *ve*, setae *sc i* anterior to *sc e*, coxal III fields distinctly separate in the midline, and the more apical and relatively shorter solenidion $\omega 1$ on tarsus I.

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Summary

Three new species of mites are described from hypopi (Acarid: Acaridae) phoretic on fleas of chipmunks and ground squirrels in California, U.S.A.: *Acarus monopsyllus* sp. n. from *Monopsyllus eumolpi* ex *Eutamias amoenus* and *E. townsendii*; *Viedebanttia diamanus* sp. n. from *Diamanus montanus* in burrows of *Spermophilus beecheyi*; *Paraceroglyphus californicus* sp. n. from *Diamanus montanus* ex *Spermophilus lateralis* and from *Oropsylla idahoensis* ex *Eutamias townsendii* and *Spermophilus beldingi*.

Résumé

Trois espèces nouvelles d'acariens (Acaridae) représentées seulement par leur stade hypope sont décrites. Elles furent découvertes sur des puces de rongeurs en Californie, U.S.A.: *Acarus monopsyllus* sp. n. ex *Monopsyllus eumolpi* de *Eutamias amoenus* et *E. townsendii*; *Viedebanttia diamanus* sp. n. ex *Diamanus montanus* trouvées dans des nids de *Spermophilus beecheyi*; *Paraceroglyphus californicus* sp. n. ex *Diamanus montanus* de *Spermophilus lateralis* et ex *Oropsylla idahoensis* de *Eutamias townsendii* et de *Spermophilus beldingi*.

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