

TWO NEW SPECIES OF *GEOMYLICHUS* FAIN, 1970 (ACARI, LISTROPHORIDAE) FROM CALIFORNIA, U.S.A.

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ABSTRACT - *Geomylichus californicus* sp. n. and *G. multistriatus* sp. n. are described from kangaroo rats, genus *Dipodomys*, from California. Two other species of *Geomylichus* [*G. dipodomius* (Radford) and *G. texanus* Fain et al.] are reported from new hosts and localities in the U.S.A.

INTRODUCTION

We describe here two new species of the genus *Geomylichus* Fain, 1970. Including these species, *Geomylichus* now contains 19 species, all from North America, except *G. neacomys* from Colombia. *Geomylichus* has been divided into 4 subgenera. Our new species both belong to the subgenus *Geomylichus*.

1. *Geomylichus* (*Geomylichus*) *dipodomius* (Radford, 1953)

This species was known from *Dipodomys spectabilis* from New Mexico (typical series) and from *Dipodomys philippsi*, from Mexico (Fain et al. 1978).

We have now found it in Texas from seven specimens of *Dipodomys elator* with the following data: TLB No. 10561, Wilbarger Co., 2 mi N Harrold (2 March 1985) (3 females and 4 males); no. 10572 and 10574, Wichita Co., 2 mi W Iowa Park (12 March 1985) (4 females and 5 males); No. 10578, 10580, 10584 and 10586, Hardemann Co. (13 March 1985) (5 females and 4 males). The striations of the shields (postscapular and hysteronotal) are more marked in these than in the specimens from the typical host but other characters agree with the latter.

2. *Geomylichus* (*Geomylichus*) *texanus* Fain, Whitaker, Schwan and Lukoschus, 1978

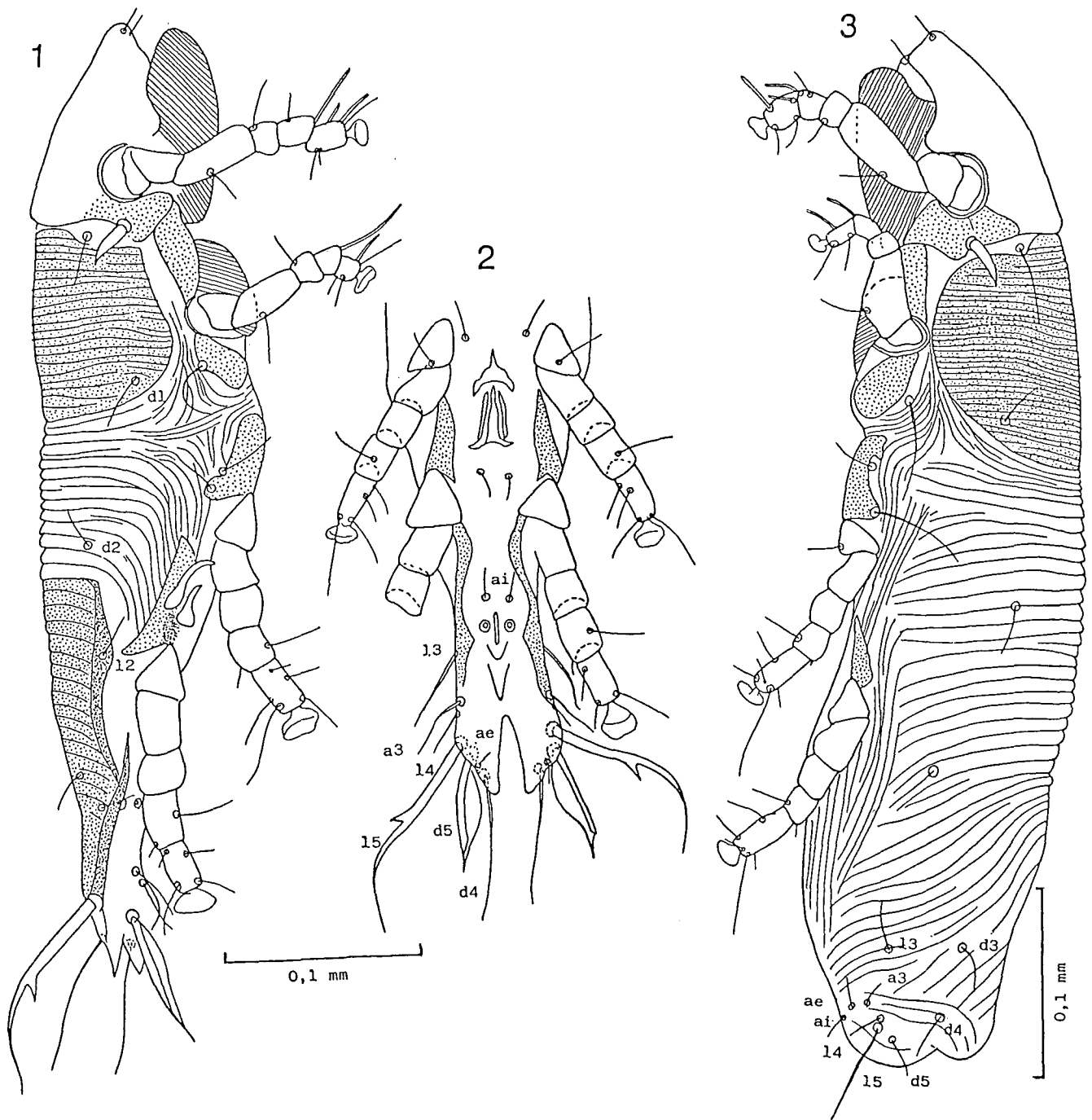
This species was described from *Dipodomys ordii* from Texas. It is also known from the same host from

New Mexico. Other hosts are *Dipodomys merriami* from Texas and Nevada and *Perognathus penicillatus* from Arizona. We found this species from the following hosts from California: *Dipodomys venustus*: (no. 10336 and 10337) from Santa Cruz Co., 1.2 mi SE Felton (22 June 1984) (3 females); *Dipodomys elephantinus* (no. 10125, 10153, 10155 and 10156) from San Benito Co., 1 mi N Pinnacles (16 June 1984) (3 males and 12 females).

3. *Geomylichus* (*Geomylichus*) *californicus* spec. nov.

Male (holotype) (figs. 1-2): Idiosoma 480 long (including posterior lobes) and 110 wide (in lateral view). Length of prescapular shield 108, of postscapular shield 102, the latter bearing 20 distinct striations along the line joining setae *sc i* and *dl* and 24 striations close to the midline. Hysteronotal shield transversely striated, its lateral borders with strongly sclerotized strips. Distance between anterior border of hysteronotal shield and setae *d2* 12. About 15 striations between hysteronotal shield and post-scapular shield. Striated membranes of coxae I and II 102 and 60 long respectively. Setae *sc e* 27 long and 6 thick. Setae *l5* 120 long, their inflated basal part 60 long and bearing a strong tooth in its distal part. Setae *d5* long, bearing a triangular membrane 17 wide (in a paratype). Leg IV (4 apical articles) 105 long. Penis 30 long (in straight line).

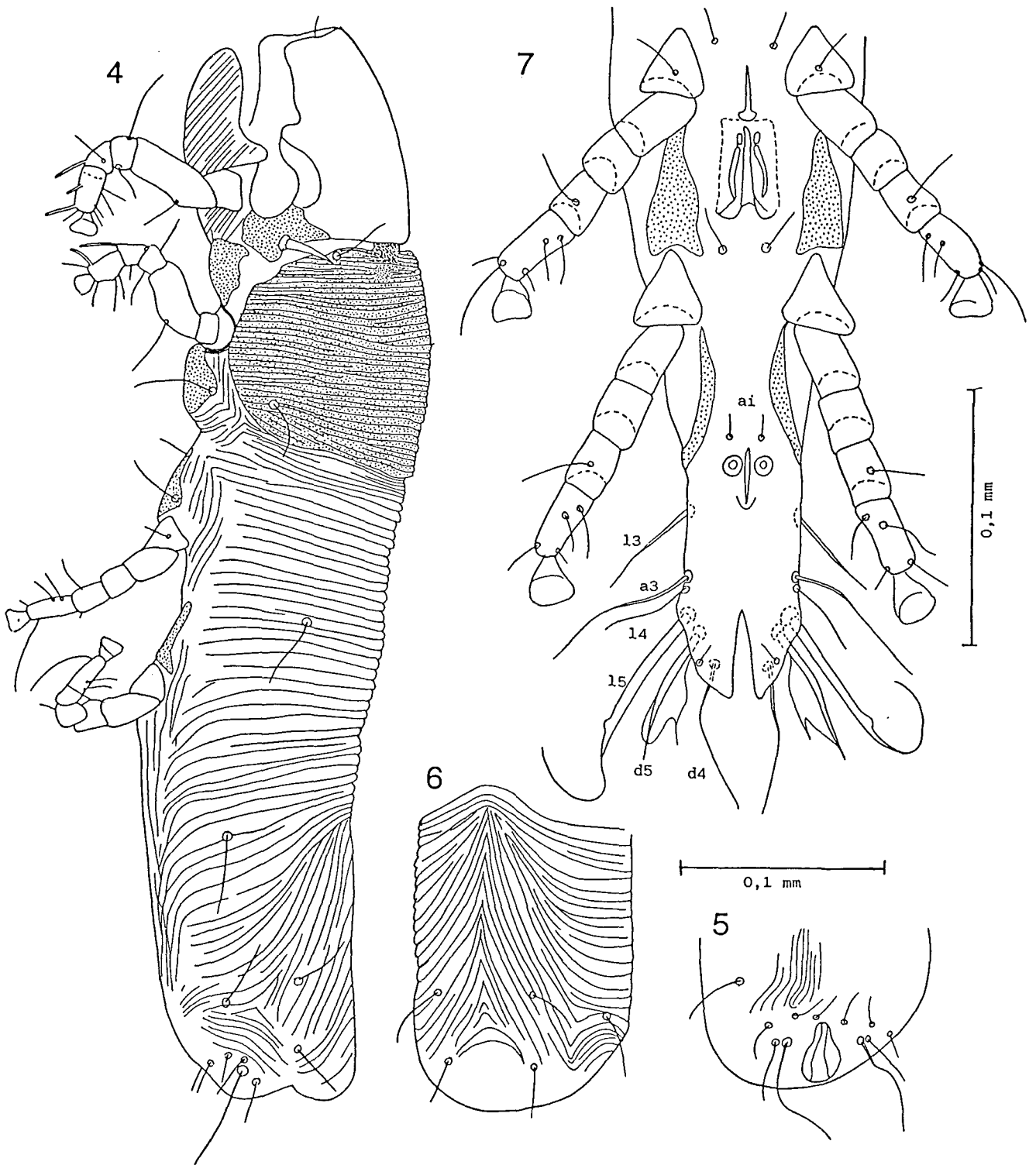
Measurements (4 paratypes from the typical host, *D. venustus*): Body length 456-480, width 105-115. Length of prescapular shield 105-108, postscapular shield 99-105. Postscapular shield with 18-20 thin but distinct striations along a line joining setae *sc i* and *dl* and



Figs. 1-3 *Geomylichus (Geomylichus) californicus* sp. n. Holotype male in lateral view (1); paratype male in ventral view (2). Paratype female in lateral view (3).

21-24 striations close to the midline. Striations numbering 14-17 between postscapular and hysteronotal shields in the midline. Lengths of setae 15 112-125, d5 57-60.

Female (fig. 3) (measurements of 6 paratypes): Length 510-555, width 100-126. Posterior extremity with 3 large lobes. Length of prescapular shield 116-123,



Figs. 4-6 *Geomylichus (Geomylichus) multistriatus* sp. n. Paratype female in lateral view (4); holotype female: posterior extremity in ventral view (5) and in dorsal view (6). Fig. 7 Paratype male in ventral view (hysterosoma).

postscapular shield 106-114. Number of postscapular striations (along a line crossing *dl* and *sc*) 28-32; these striations being less distinct than in the male especially in the anterior part of the shield. Hysteronotum with 25-32 relatively poorly developed transverse striations in anterior half; these striations strongly oblique but not longitudinal in posterior half. Opisthosoma 180-200 long. Setae *l5* 60-80 long, relatively thin, other posterior setae very thin and much shorter. Setae *sc e* as in the male. Length of striated claspings membranes of coxae I 90-100, of coxae II 60-70. Leg IV (4 apical segments) 90-93 long.

Host and locality: All hosts were collected in California.

Remarks: In the key to the genus *Geomylichus* by Fain and Whitaker (1978), the male of this new species keys to couplet 13, comprising 3 species. It differs from these mainly by the toothed aspect of seta *l5*. The female keys to couplet 15 and is close to *G. microdipodops*, but differs from the latter by the much smaller size of the body, the smaller number of transverse striations on the prescapular shield and hysteronotum and the shorter opisthosoma.

Holotype: Male from *Dipodomys venustus*, female (TLB No. 10338), Santa Cruz Co., 1.2 mi SE Felton, 22 June 1984.

Paratypes: 4 males and 11 females with same data as holotype; 1 female from the same host species and data but no. 10339 (male); 1 female and 1 male with same data but 21 June 1984, no. 10329 (female); 1 female and 2 males from same host and data but no. 10337; 1 female from same host and data but no. 10336. From *Dipodomys californicus* no. 10363 (female), Tehama Co., 6 mi NE Dale, 23 June 1984: 1 male and 1 female; from the same host and data but no. 10367 (male): 1 female. From *Dipodomys heermanni* no. 10117, male and 10551 (female), San Benito Co., 1 mi N. Pinnacles, 14 June 1984: 2 males. From *Dipodomys elephantinus* no. 10129 (female), San Benito Co., 1 mi N Pinnacles, 16 June 1984: 1 male and 1 female; from same host and data but no. 10155, 1 female; from same host and data but no. 10156: 3 females.

Holotype male and paratypes (2 males and 2 females) in the US National Museum, Washington, U.S.A. Paratypes in the collection of the authors.

4. *Geomylichus (Geomylichus) multistriatus* spec. nov.

Female (holotype) (fig. 4-6): Idiosoma 516 long, 102 wide. Posterior extremity with 3 large lobes. Length of prescapular shield 119, of postscapular shield 97. Number of striations on postscapular shield (counted along a line joining setae *sc i* and *dl*) 42; these striations

being very thin, regular, located very close to each other, and not interrupted in longitudinal areas. Hysteronotum within its anterior half or two thirds, with 4-5 transverse striations located very close to each other followed in midline by about 35 transverse striations located farther apart from each other. Behind these transverse striations the median area of the hysteronotum bearing oblique or longitudinal striations. Opisthosoma 190 long. Setae *l5* thin, 60 long. Opisthogaster striated longitudinally. Striated claspings membranes of coxae I 102 long, those of coxae II 62 long. Setae *sc e* 25 long and 5.5 thick (maximum). Leg IV (4 terminal segments) 90 long.

Measurements (3 paratypes): Length of idiosoma 525-550, prescapular shield 117-126, postscapular shield 94-108. Number of striations on postscapular shield 34-41 (along the line *dl* to *sc i*); number of transverse striations on hysteronotum (anterior half of hysteronotum) 35-39. Length of leg IV (4 terminal articles) 92-96. Length of setae *l5* 40-55. Membranes of coxae I 105-111, of coxae II 64-66. Length of *sc e* 26-28, width 5.2-5.6.

Male (paratype) (fig. 7): Idiosoma 480 long. Prescapular shield 100 long; postscapular shield 90 long, bearing about 40 thin and regular striations. About 30 transverse striations (in midline) between postscapular and hysteronotal shield. Hysteronotal shield completely striated, its margins slightly sclerotized; distance between anterior border of this shield and setae *d2* 27. *Sc e* 26 long, 5 thick. Setae *d5* 48 long, with a wide triangular membrane bearing a needle-like prolongation setae *l5* 110-120 long, its basal part dilated and 60 long. It bears close to its end a narrow and short aliform process 10 long.

Measurements (3 paratypes): Idiosoma 450-495 long, prescapular shield 105-109, postscapular shield 94-101, with 35-39 striations. Setae *d5* 46-50, with a triangular membrane bearing a needle-like prolongation; *l5* 105-110 long, its dilated part longer than its thin apical part. Membranes of coxae I 92-96 long, of coxae II 48-54 long. Leg IV 95-99 long.

Host and locality: Holotype female from *Dipodomys nitratoides* (TLB No. 10254) from Kern Co., 10 mi W Buttonwillow, California, 19 June 1984.

Paratypes: 3 females and 4 males from the same host and locality but on hosts no. 10247, 10248, and 10251. Holotype in the USS National Museum, Washington. Included are the following specimens we previously included in *Geomylichus texanus* (see Fain et al., 1978): one female on *D. merriami* (JOW no. 9782) from Texas, Line 5, 8 mi N Van Horn, Culberson Co.; one female from *Dipodomys* sp. (JOW No. 9778) from the same locality; one female from *Microdipodops megacephalus* (JOW No. 12249) from Hickison Summit, Lander Co., Nevada, 22 June 1984; one male from

Perognathus penicillatus from Arizona.

Remark: This species is closest to *G. microdipodops*. It differs from it, in both sexes by the much smaller size of the body, in the female by the greater number of striations on the postscapular shield and the shorter *l5* setae, and in the male by the different shape of setae *d5* and *l5*.

Species groups in the typical subgenus Geomylichus

The following groups, based on females, can be recognized in the subgenus:

1. Group *thomomys*

Opisthogaster striated transversely; lateral borders of postscapular shield irregular and distinctly lobed; setae *l5* very long (270). This group contains 2 species: *G. thomomys* Fain et al., 1978 and *G. klebergi* (McDaniel, 1965).

2. Group *inaequalis*

Opisthogaster striated longitudinally; postscapular shield and setae *l5* as in the *thomomys* group. This group contains 3 species: *G. inaequalis* Fain et al., 1978; *G. brevispinosus* Fain et al., 1978 and *G. formosus* Fain et al., 1987.

3. Group *perognathi*

Opisthogaster striated longitudinally; lateral borders of postscapular shield regular and rounded, not lobed. Setae *l5* 90-130 long; postscapular shield with about 18-22 thin and regular striations along a line joining *sc e* and *dl* and 23-26 striations in midline. Hysteronotum with about 70 transverse striations in midline, absence of oblique or longitudinal striations in the posterior median part of hysteronotum. Only one species: *G. perognathi* Fain and Whitaker, 1980.

4. Group *microdipodops*

Opisthogastric striations and lateral borders of postscapular shield as in the group *perognathi*. Setae *l5* 40-80 long; striations of postscapular shield thin and regular, not interrupted, 28-42 in number. Hysteronotum with anterior two thirds or half bearing 25-45 transverse striations in midline, the posterior half or third with very oblique or longitudinal striations in its median area. This group contains 3 species: *G. microdipodops* Fain and Whitaker, 1987, *G. californicus* sp. n. and *G. multistriatus* sp. n.

5. Group *dipodomius*

Differs from the *microdipodops* group by the aspect of the striations of the postscapular shield which are less numerous (20 to 25), sinuous and more or less completely interrupted in 5 longitudinal areas, by the smaller number of hysteronotal transverse striations (12 to 25) and the shorter *l5* (20-30). This group contains 3 species: *G. dipodomius* (Radford, 1935), *G. texanus* Fain et al. 1978, and *G. utahensis* Fain and Whitaker, 1987.

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