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THE LIFE CYCLE OF *LEPIDOGLYPHUS HYLANDI* (FAIN, 1969) COMB. NOV. (ACARI, GLYCYPHAGIDAE)

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ABSTRACT : The life cycle of *Dermacarus hylandi* Fain, 1969 is described. The adults belong to the genus *Lepidoglyphus* Zachvatkin, 1936 (Acari, Glycyphagidae).

RÉSUMÉ : Le cycle de développement de *Dermacarus hylandi* Fain, 1969 est décrit. Les adultes font partie du genre *Lepidoglyphus* Zachvatkin, 1936 (Acari, Glycyphagidae).

INTRODUCTION

Recent investigations on life cycles of glycyphagine mites have shown that different genera of mites can possess the same morphological type of heteromorphic deutonymphs (= hypopi).

The most common and best known type of hypopus in the glycyphagines is the *Dermacarus* type. More than 25 species have been described so far in this genus, almost all only from their hypopial stage (FAIN, 1969).

The name *Dermacarus* represents not only a morphological type of hypopus but it has also been given to a valid genus created by HALLER (1880) for the species *Dermaleichus sciurinus* Koch, 1841, known from both hypopi and adults.

ZACHVATKIN (1941) rejected the genus *Dermacarus* as a synonym of *Labidophorus* Kramer, 1880 and he proposed a new name, *Myacarus* to replace the name *Homopus* (praeoc.) given by KOCH (1841) for an hypopus (*Homopus hypudaei* Koch, 1841). Actually the hypopi of both *Myacarus* and *Dermacarus* are morphologically very close to each other and FAIN (1969) considered them as synonyms.

During these last twenty years the life cycles of several species described from their deutonymph have been elucidated. These observations have shown that the *Dermacarus*-type hypopus is involved in the life cycle of several different genera of glycyphagine mites.

A brief survey of the literature follows.

RUPES, YUNKER and WILSON (1971) succeeded in rearing the adult forms of *Dermacarus ondatrae* Rupes and Whitaker (1968) described from hypopi collected from the muskrat in the U.S.A. The adults belonged to a new genus *Zibethacarus* generically distinct from the adults of *Dermacarus sciurinus*.

In 1974, FAIN and LUKOSCHUS elucidated the life cycle of the old species *Dermacarus hypudaei* (Koch, 1841). The hypopi of this species are cos-

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mopolitan and very common on rats and insectivores of the Palaearctic and the Nearctic regions. The adults that they obtained, did not belong to the genus *Dermacarus* but to the genus *Glycyphagus*. However they did not agree exactly with *Glycyphagus* s. str. because the males presented large combs on tibiae I and II, which is not the case in *Glycyphagus* s. str. The species *D. hypudaei* needed to be separated in a new subgenus and FAIN and LUKOSCHUS (1974) proposed the name *Myacarus* which had already been given for the hypopus of this species by ZACHVATKIN before the life cycle was known.

In 1980, SPICKA and OCONNOR described the life cycle of a new species belonging to subgenus *Myacarus, (Glycyphagus (Myacarus) microti)*.

FAIN and *al.* (1985) studied the life cycle of *Dermacarus newyorkensis* Fain, 1969. The adult mites that they obtained by rearing the hypopi collected from *Zapus hudsonius*, belonged in fact to two different species and to a new subgenus of *Glycyphagus* : *Glycyphagus (Zapodacarus) newyorkensis* Fain, 1969 and *G. (Z.) zapus* Fain *et al.*, 1985.

In 1977, FAIN and PHILIPS described a new species, *Dermacarus pilitarsus* based on hypopi collected from the nest of *Falco sparverius* in the U.S.A. In new material from the same nest they found two of these hypopi in the molting stage and containing tritonymphs belonging to the genus *Lepidoglyphus* (see FAIN and PHILIPS, 1981). They also found, mixed with these hypopi, several adults and nymphs of a species apparently identical with *Lepidoglyphus fustifer* (Oudemans, 1903).

In this paper we describe the life cycle of another species of *Lepidoglyphus*, i.e. *L. hylandi* (Fain, 1969) comb. nov. So far this species was known only from the hypopial stage, described as *Dermacarus hylandi* Fain, 1969.

It appears from these observations that the hypopi of the phenotype *Dermacarus* are utilized by four different genera of Glycyphaginae, i.e. *Dermacarus, Zibethacarus, Glycyphagus* and *Lepidoglyphus*, and by two different subgenera of *Glycyphagus*, i.e. *Myacarus* and *Zapodacarus*.

These observations prove, once more, that the classification of the adults does not correspond always with that of the hypopi (FAIN, 1969, p. 20). In order to prevent confusion we believe that a conservative attitude should be adopted in the description of new hypopial forms and that as long as the adults of the species are not known, the new hypopus should be named after the hypopial group to which it belongs (e.g. *Dermacarus, Sciuropsis, Rodentopus, Labidophorus, Xenoryctes* etc.) and should not be included in a genus (e.g. *Glycyphagus, Lepidoglyphus, Ctenoglyphus, Diamesoglyphus* etc.) to which it is believied to belong.

All the measurements given herein are in microns (μm).

Lepidoglyphus hylandi (Fain, 1969) comb. nov.

Dermacarus hylandi FAIN, 1969 : 77 ; FAIN *et al.* 1971 : 15 ; FAIN and WHITAKER, 1973 : 157, and 1978 : 512.

Male : (Figs. 1-7) : Length and width of idiosoma in four specimens : 438 × 310 ; 426 × 300 ; 420 × 290 ; 418 × 305. Cuticle of dorsum and venter uniformly covered with short pointed elevations. There are 3 pairs of lyrifissures (2 along posteriror margin of body and one laterally to *d1*). *Dorsum* : Absence of shield or crista. Chaetotaxy : Setae *ve* absent. Setae *vi, sc i* and *sc e* situated as in *Glycyphagus (Zapodacarus) newyorkensis*. Length of setae in 3 specimens : *vi* 105 to 120 ; *sc i* 80 to 105 ; *sc e* 80 to 120 ; *d1* 85 to 130 ; *d2* 80 to 110 ; *d3* 350 to 420 ; *d4* 350 ; *d5* broken ; *l1* 145 to 160 ; *l2* 90 to 100 ; *l3* 210 ; *l4* 180 to 190 ; *l5* (ventral) 150 to 180 ; *h* 190 ; *sh* (ventral) 90. The setae *s cx* are thick, straigth, not forked and bear numerous lateral very thin and forked branches. *Venter* : There is a short sternum. Epimera III free ; epimerites III fused with epimera IV. Anus ventro-terminal. Sexual organ small, situated at level of coxae II ; sexual suckers very small. Length of setae : *a1* 17 ; *a2* 60 to 75 ; *a3* 170. Legs : Tarsi I-IV not modified, narrow and 105-90-100-120 long, all bear a ventral grooved and pilose hair almost as long as the tarsus, and an apical very small and almost vestigial claw. Apical half of tarsi I-II with an

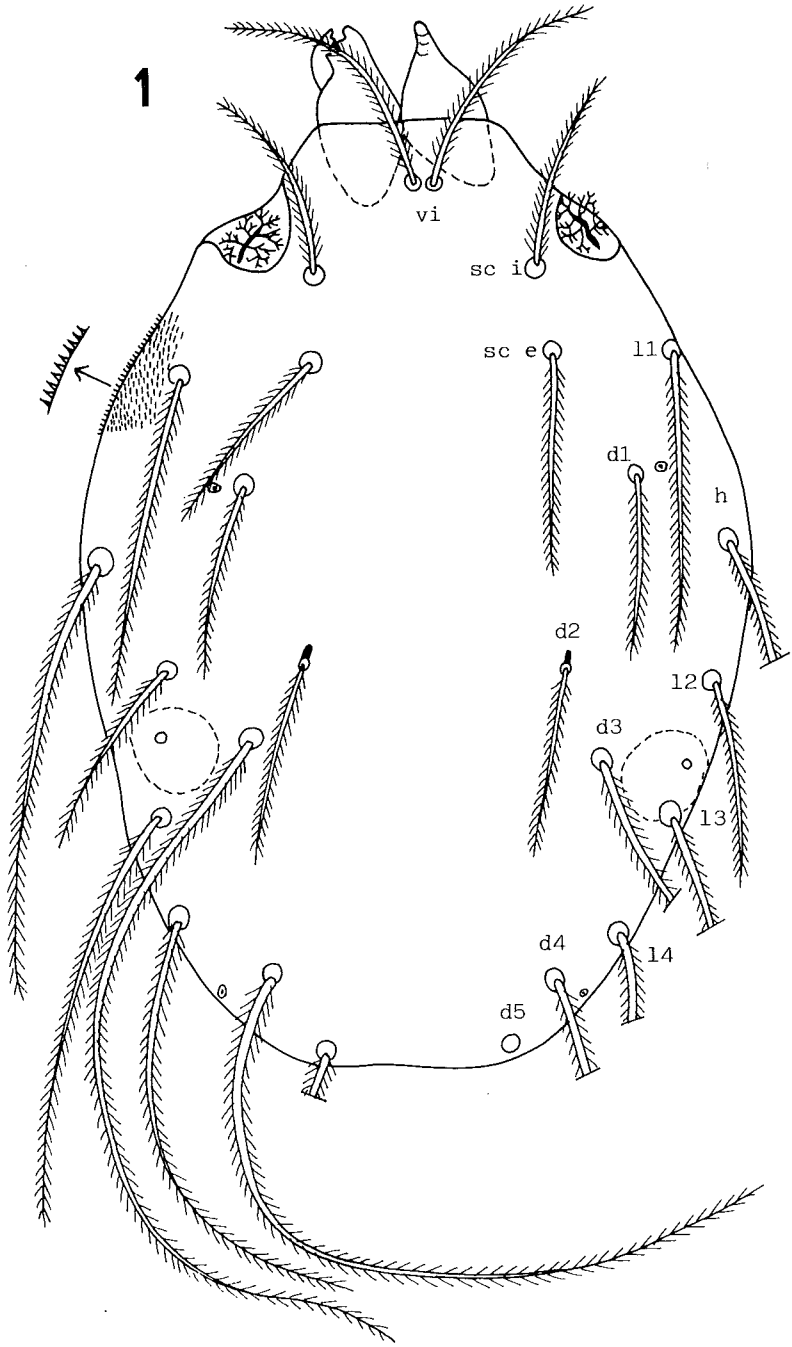


FIG. 1 : *Lepidoglyphus hylandi* (Fain, 1969). Male in dorsal view.

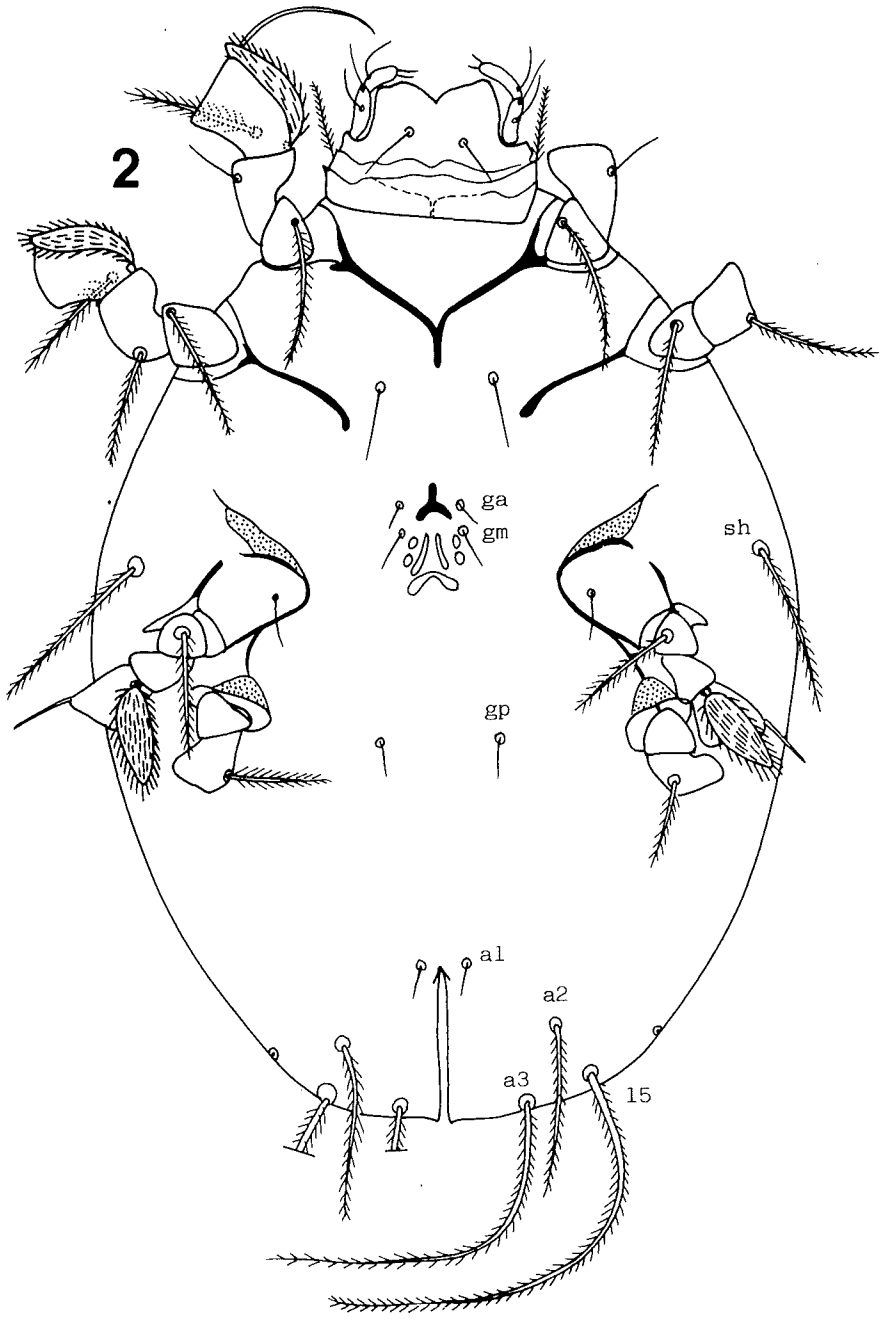
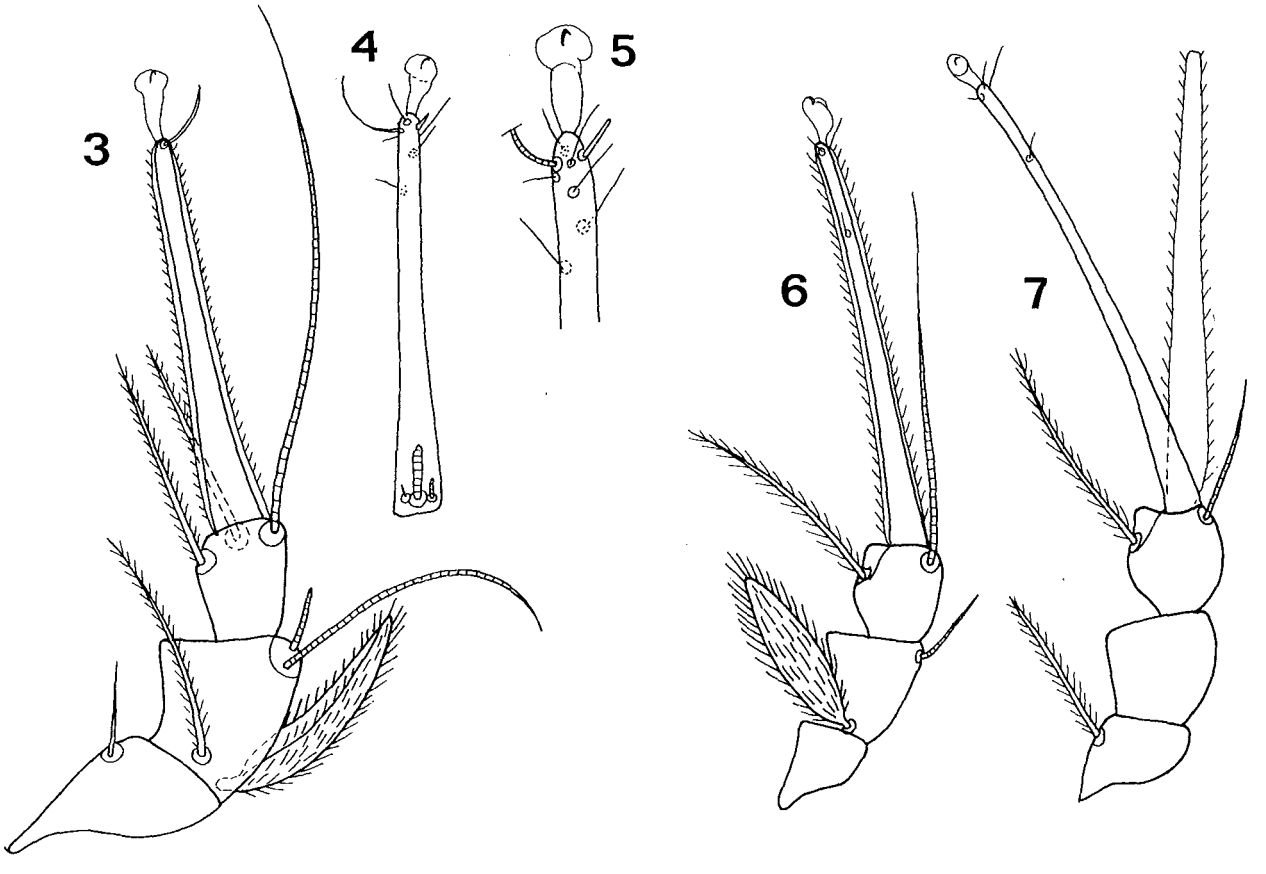


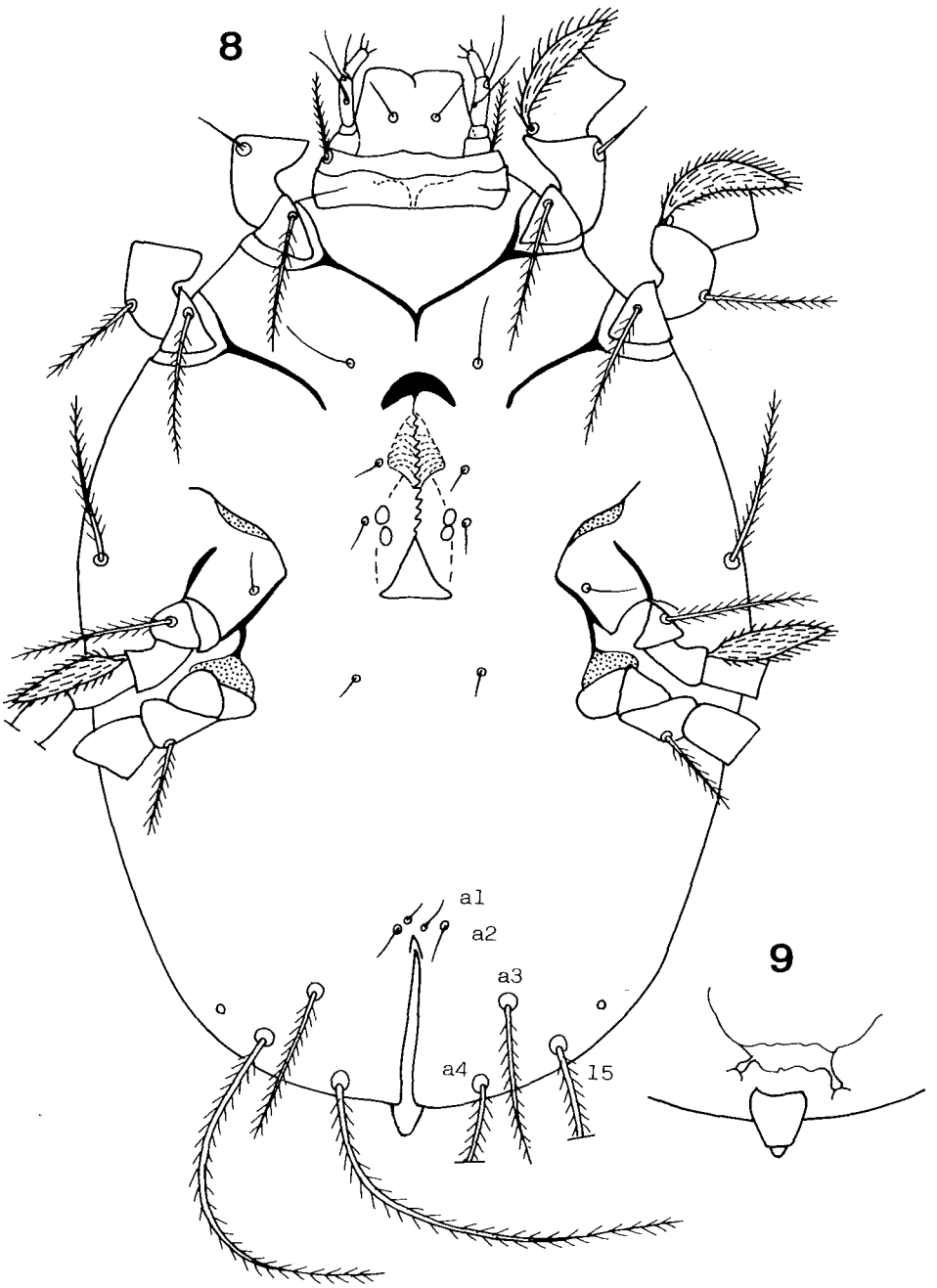
FIG. 2 : *Lepidoglyphus hylandi* (Fain, 1969). Male in ventral view.

elongate ventro-apical spine, 3 thin and short apical setae and 3 longer and thin subapical setae. Tarsus I with a short basal *ω1* flanked by a short hairy famulus, a very short *ω2* approximately at the same level as *ω1* and apical *ω3*. Tarsi III with 4 short apical setae (one is a thin spine) and one thin and short seta situated at the base of the apical fifth of the tarsus. Tibiae I-II with 2 thick pilose setae about twice as long as these tibiae ; tibiae III-IV with one of such setae. Tibiae I to III with a long solenidion, tibia IV with a much shorter solenidion (40 long). Genua I-II with a long normal pilose seta and a wide, flat and sligthly curved and pilose scale longer (55-60) than the genu (45). Genua III with only the scale, also longer than the genu. These scales are 3 to 4 times longer than wide. Genu I with 2 strongly unequal solenidion (ratio 1 : 5). Femur I with a thin, relatively short and bare seta, femora II and IV with a longer and pilose seta. Gnathosoma much wider (100) than long (60, palps not included) ; base bearing several transverse ridges ; palps long and narrow.

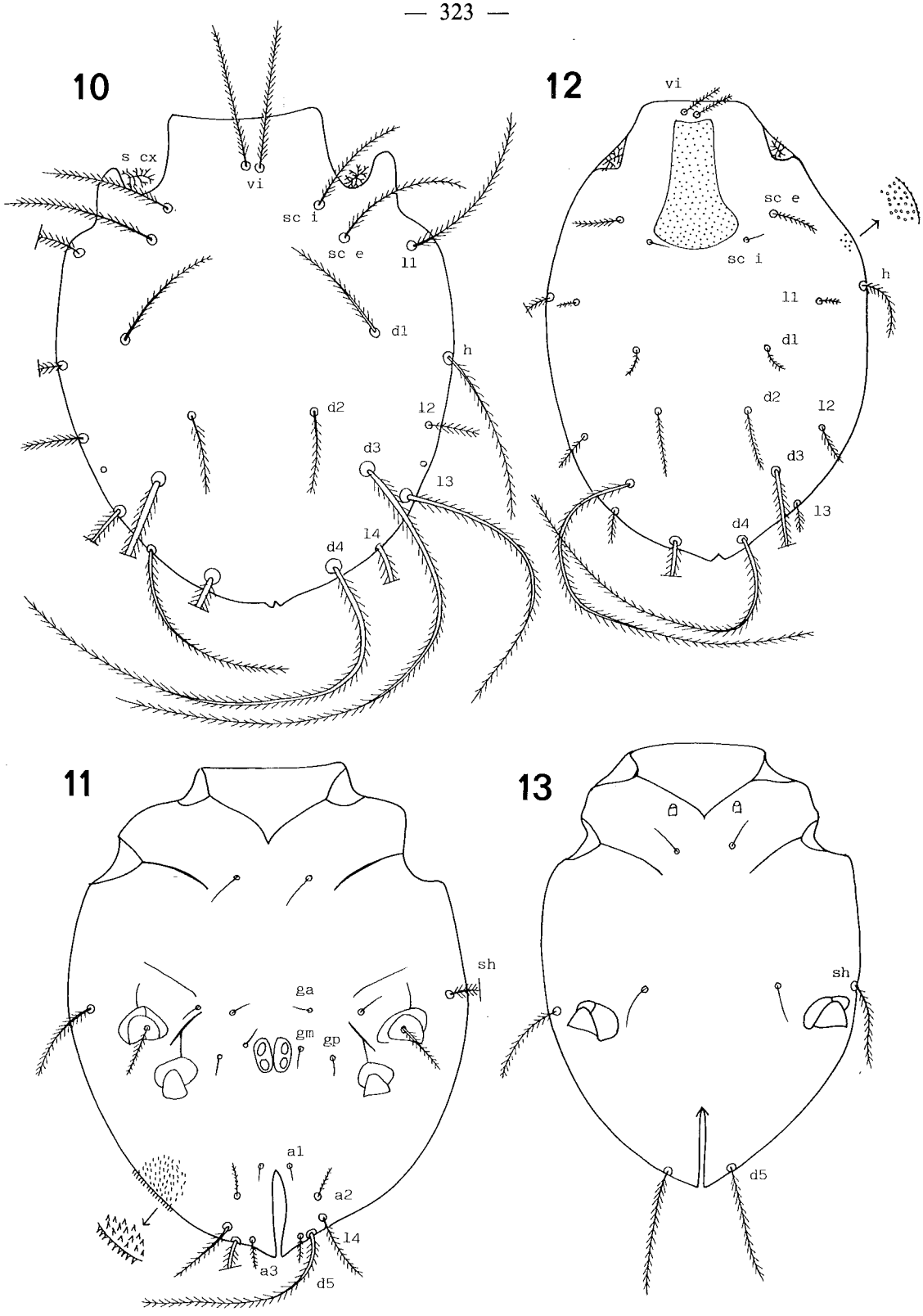
Female (figs. 8-9) : Length and width of idiosoma in two specimens : 480 × 315 and 420 × 300. Cuticle as in the male. *Dorsum* : As in female but the setae are generally longer : *vi* 135 ; *sc i* 100 ; *sc e* 105 ; *d1* 95 ; *d2* 125 ; *d3* 420 ; *d4* 450 ; *d5* 360 ; *l1* 160 ; *l2* 110 ; *l3* 200 ; *l4* 220 to 250 ; *l5* 210 ; *h* 200 ; *sh* 100. Copulatory papilla dorsal, conical in shape, 18 long and 21 wide at its base. *Venter* : Vulva 90 long, situated between coxae II and III. Epigynium large, close to sternum. Genital suckers very small. There are only 4 pairs of anal setae, the



FIGS. 3-7 : *Lepidoglyphus hylandi* (Fain, 1969). Male. Leg I dorso-laterally (3), tarsus I dorsally (4), apex of tarsus I dorsally (5) ; leg III dorso-laterally (6) ; leg IV dorso laterally (7).



FIGS. 8-9 : *Lepidoglyphus hylandi* (Fain, 1969). Female ventrally (8) ; copulatory papilla and base of spermatheca (9).



FIGS. 10-13 : *Lepidoglyphus hylandi* (Fain, 1969). Tritonymph in dorsal (10) and ventral (11) view ; larva in dorsal (12) and ventral (13) view.

two anterior pairs being bare. Gnathosoma 102 wide and 72 long ; chelicerae 90 long. Legs as in the male. Length of tarsi I-IV 108-93-116-128. Leg chaetotaxy and solenidiotaxy as in the male.

Tritonymph (figs. 10-11) : Length and width of idiosoma in 2 specimens : 290 × 205 and 235 × 190. Cuticle as in adults. *Dorsum* : absence of a shield. Chaetotaxy as in the adults but shorter. Venter as in adults but the genital organs are replaced by two pairs of genital suckers and a short slit. Chaetotaxy of legs as in the adults but the genual scales I to III are relatively narrower.

Deutonymph : It has been recently redepicted (FAIN and WHITAKER, 1978) from specimens found on *Tamias striatus*.

Protonymph : We have not seen protonymphs.

Larva (figs. 12-13) : Length and width of idiosoma in 2 specimens 168 × 119 and 150 × 105. Cuticle uniformly covered with numerous very samll rounded elevations (shagreen like) except on the dorsal part of propodosoma which bears a rather large punctate shield. Chaetotaxy as in the adult but the setae *l4, l5*, the anals and the genitals are lacking. Setae *sc i* are situated at the same level as the *sc e*. Coxae I with a pair of very short Claparede's organs.

Habitat : Numerous deutonymphs (hypopi) were found on a *Tamias striatus*, New York, Livingstone Co, 2 km N. Canaseraga, U.S.A., June 1982. The adults (2 females and 4 males), 4 tritonymphs and 3 larvae were reared from some of these hypopi. We have also 4 hypopi in the molting stage and containing tritonymphs.

Remarks :

Lepidoglyphus hylandi differs from the other species of the genus by the presence in both sexes of a large pilose scale on the genua I to III. In *L. michaeli* Oudemans, 1903 and *L. burchanensis* Oudemans, 1903 only the genua III bear such a scale. In all the other species of *Lepidoglyphus* the genua are devoid of a scale.

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