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*GRAMMOLICHUS ELIOMYS* (GLYCYPHAGIDAE),  
A NEW MITE WITH ENDOFOLLICULAR HYPOPI IN THE TAIL  
OF THE DORMOUSE *ELIOMYS QUERCINUS OPHIUSAE* THOMAS  
(RODENTIA, GLIRIDAE) IN FORMENTERA ISLAND, SPAIN

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TAXONOMY LIFE CYCLE	SUMMARY : The evolutive cycle of a new mite, <i>Grammolichus eliomys</i> sp. n. with endofollicular hypopi in the tail of the dormouse, <i>Eliomys quercinus ophiusae</i> Thomas, from Formentera Island (Pitiusas, Spain) is described. The systematic position of the genus <i>Grammolichus</i> Fain, 1968 is discussed.
TAXONOMÍA CICLO BIOLÓGICO	RESUMEN : Se describe el ciclo biológico completo de una nueva especie de ácaro, <i>Grammolichus eliomys</i> sp. n., con hipopus parásitos de la cola del lirón careto de Formentera (Pitiusas, España), <i>Eliomys quercinus ophiusae</i> Thomas (Rodentia, Gliridae) y se discute la posición sistemática del género <i>Grammolichus</i> Fain, 1968.
TAXONOMIE CYCLE ÉVOLUTIF	RÉSUMÉ : Le cycle évolutif de <i>Grammolichus eliomys</i> sp. n. est décrit. L'hypope vit dans les follicules pileux chez <i>Eliomys quercinus ophiusae</i> Thomas, dans l'île Formentera (Pitiusas, Espagne) et les adultes sont libres. La position systématique du genre <i>Grammolichus</i> Fain, 1968 est discutée.

During the study of the ectoparasites of Spanish small mammals, one of us (M. P.) isolated a great number of hypopi endofollicular belonging to the genus *Coccyopus* Fain, 1969, from the tail of some specimens of *Eliomys quercinus ophiusae* Thomas, from Formentera Island (Pitiusas, Spain). From the litter of the cage occupied by one of the dormice during some time, it was also possible to isolate all developmental stages (males, females, tritonymphs, protonymphs and larvae) of a mite belonging to the genus *Lophuromyopus* subgenus *Grammolichus* Fain, 1968. One of the

tritonymphs had the exuvia of the hypopi which enabled the relationship between both forms to be established.

SYSTEMATIC POSITION  
OF THE GENUS GRAMMOLICHUS

The genus *Grammolichus* Fain, 1969 was erected to include adults of six new species collected from Rodents' and Birds' nests in Africa.

The discovery of the life cycle of one of these,

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*Grammolichus hirundinis* Fain, 1968 enabled to observe that hypopial stage corresponded to the genus *Lophuromyopus* Fain, 1965. This suggested that all the adults described as *Grammolichus* belong to the genus *Lophuromyopus* (*Grammolichus*) Fain, 1968, which would include, also, the hypopi of *Lophuromyopus* with short claws I and II and with strong simple spines on femur I and II.

The genus *Coccyopus* Fain, 1969, was separated from the genus *Lophuromyopus* Fain, 1965 to include those hypopi with short pretarsi I and II. The discovery of the life cycle of *Grammolichus eliomys* with adults corresponding to one genus (*Lophuromyopus* (*Grammolichus*)) and hypopi corresponding to another (*Coccyopus*) proves, once more, that the classification based on the hypopi does not coincide always with that based on the imagos.

We think that *Grammolichus* must be transferred, again, to genus level to include all those species for which adults are known (*G. rwandae* Fain, 1968 ; *G. ploceanus* Fain, 1968 ; *G. hirundinis* Fain, 1968 ; *G. aureliani* Fain, 1968 ; *G. malukuensis* Fain, 1968 y *G. tikai* Fain, 1968), and to maintain provisionally the rest (*Lophuromyopus* (*Grammolichus*) and *Coccyopus*) in the genus in which they were originally described, until their corresponding adult forms are known.

Family GLYCYPHAGIDAE Berlese, 1887

Subfamily LOPHUROMYOPINAE Fain, 1967

Genus GRAMMOLICHUS Fain, 1968

*Grammolichus* Fain, 1968 a

*Lophuromyopus* (*Grammolichus*) Fain, 1968 b

***Grammolichus eliomys* spec. nov.**

Adults are close to *G. malukuensis* Fain, 1968, nevertheless they could be differentiated by their bigger size, the presence of claws on pretarsi the kind of striation of the cuticule and the length of

the pseudotrachea, which are longer and cylindrical.

*G. eliomys* is distinguished from *G. rwandae* and *G. ploceanus* by the shorter length of the lateral setae.

Hypopi differ from all those described belonging to the subgenus *Grammolichus* by the length of the pretarsi and claws I and II, the claw being more than twice as long as the pretarsus, which is very short. This characteristic makes this hypopus similar to those of the genus *Coccyopus* Fain, 1969. Like *C. funisciuri* (Fain, 1967) and *C. sinensis* Fain, 1969, this hypopus has seta  $l_4$  transformed into a short spine.

■ **Female** (Holotype) (Figs. 1-2). — Idiosoma ellipsoidal ; Length 520  $\mu$  ; width 351  $\mu$ . The tegmen covers the gnathosoma and the palpi completely. Cuticule strongly striated. On the dorsal side, striation is directed to the middle of the body. Vulva with the posterior lip large, of 99  $\mu$  on its base. Epigynium well distinguished.

Idiosomal setae short : *sci* 23  $\mu$  ; *sce* 26  $\mu$  ;  $l_1$  33  $\mu$  ;  $l_2$  46  $\mu$  ;  $l_4$  48  $\mu$  ; *hi* 38  $\mu$ . Tarsi I and IV 73 and 83  $\mu$  respectively.

■ **Male** (Allotype) (Figs. 3-4). — Length of the idiosoma 416  $\mu$  (435 in a male paratype), width 260  $\mu$  (273 in a paratype). Dorsal striation stronger than in the female and with a dendritic aspect in the middle. Pseudotrachea shorter than in the female, in relation to the size of the bursa. In the ventral region the cuticular striation is interrupted at both sides of the penis in two spotted areas.

Sternum 33  $\mu$  long.

Penis 63  $\mu$  long, with the genital suckers slightly forward from the middle point.

Idiosomal chaetotaxy : *sci* 18  $\mu$  (20  $\mu$  in a paratype) ; *sce* 18 (20)  $\mu$  ;  $d_1$  13 (15)  $\mu$  ;  $d_2$  10 (10)  $\mu$  ;  $d_3$  36 (46)  $\mu$  ; *hi* 30 (40)  $\mu$  ;  $l_1$  26 (18)  $\mu$  ;  $l_2$  36 (46)  $\mu$  ;  $l_3$  33 (43)  $\mu$  ;  $l_4$  26 (36)  $\mu$  ;  $l_5$  23 (26)  $\mu$  ;  $d_5$  18 (20)  $\mu$ .

Legs are shorter and stronger than in female. All the tarsi have an apical claw well developed and with incisions. Tarsi I and IV 63 (66)  $\mu$  and 69  $\mu$  respectively.

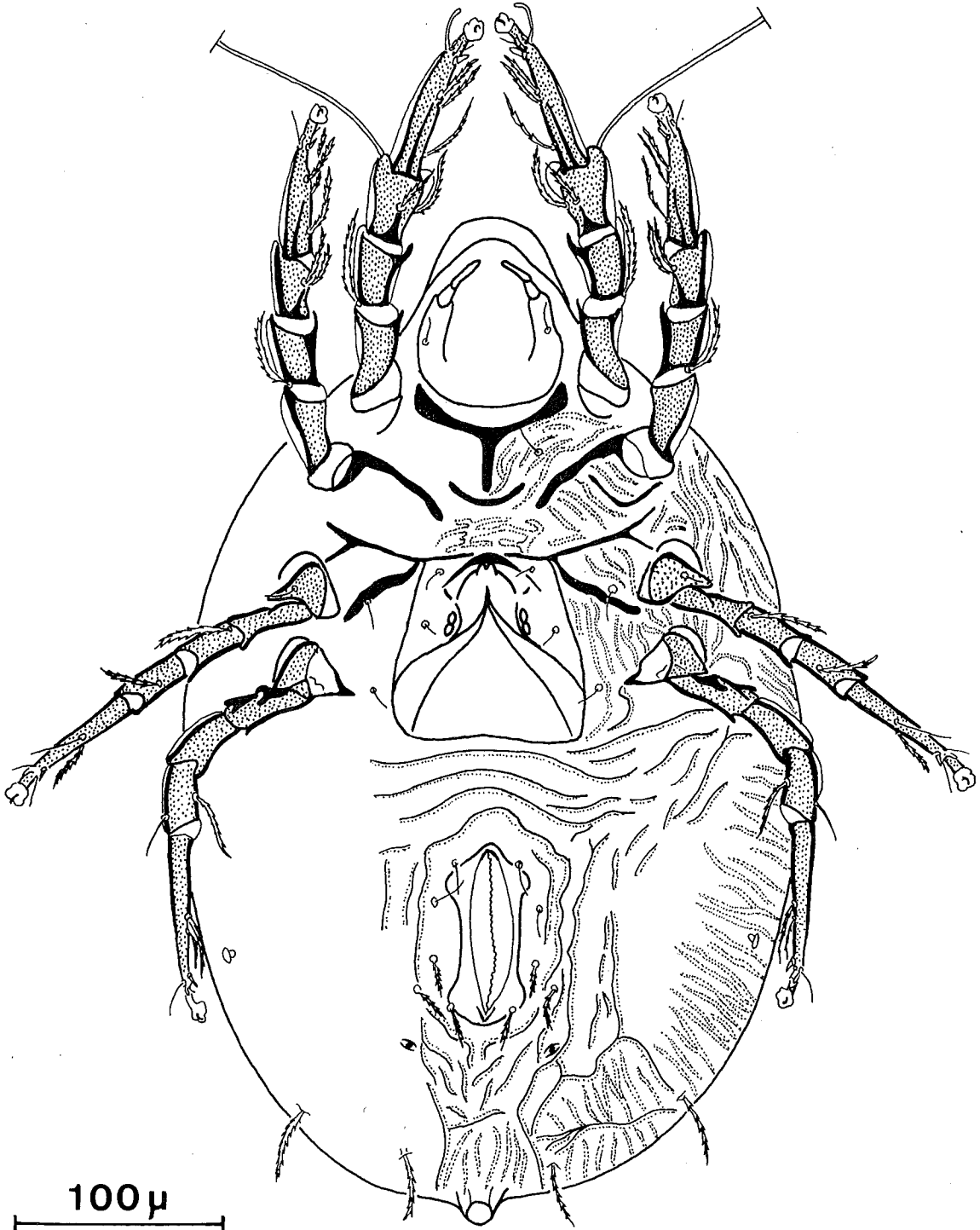


FIG. 1 : *Grammolichus eliomys* sp. n., female (ventral view).

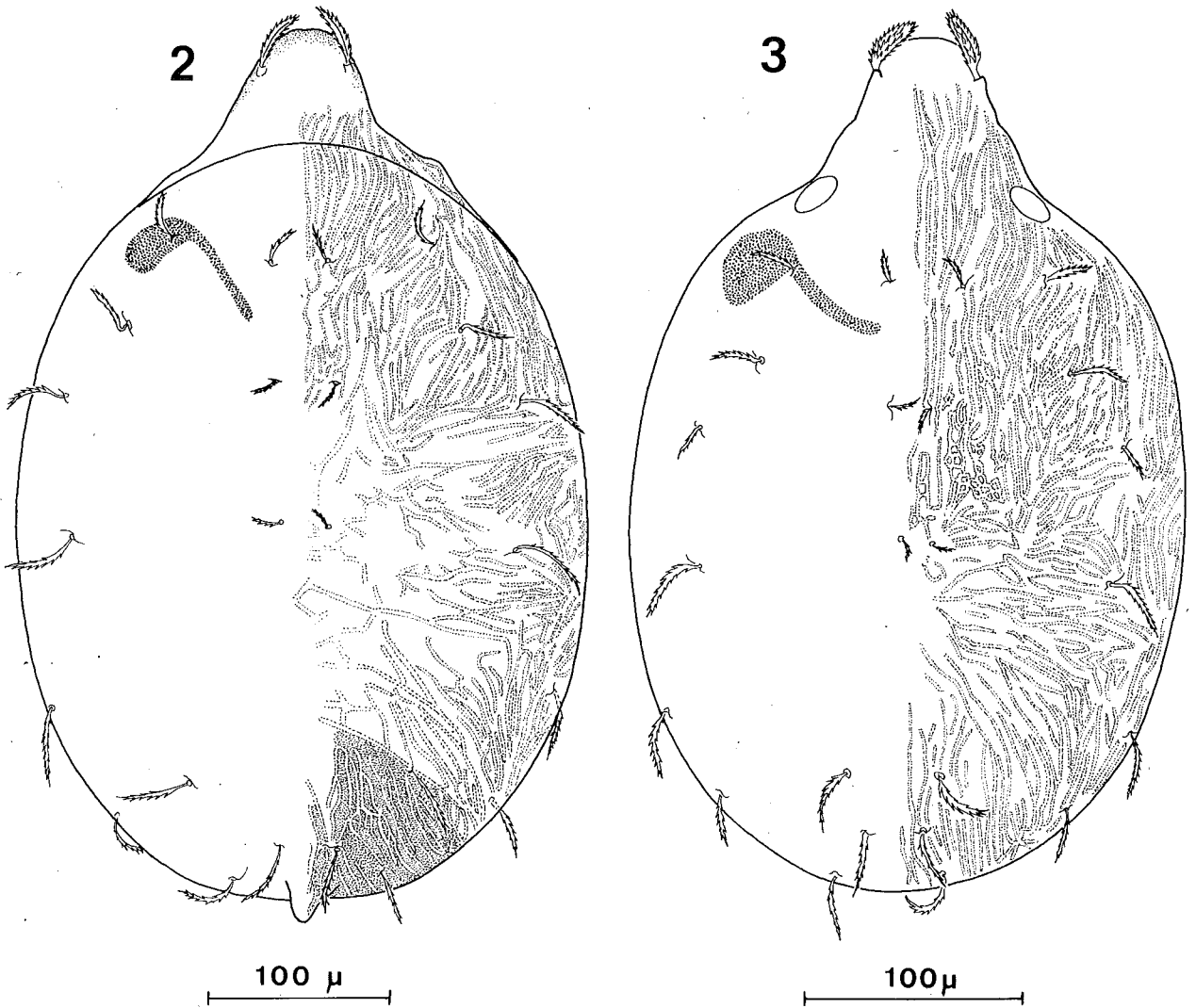


FIG. 2-3 : *Grammolichus eliomys* sp. n.  
2. — Female ; 3. — Male. (Both in dorsal view).

■ *Tritonymph* (Fig. 6). — (Measurements from 4 specimens). Length 343 (332-354)  $\mu$ , width 225  $\mu$ . Cuticula with an irregular striation. Propodosomal shield present and with *ve*, which are the only pair of dorsal setae without pectination. Posterior edge of the body slightly indented. *vi* threepronged and barbed ; *ve* short and smooth. Length of the idiosomal setae variable, from 10  $\mu$  (*d*<sub>1</sub>) to 42  $\mu$  (*l*<sub>3</sub>).

Anus ventral, with five pairs of anal setae. Genital suckers placed slightly behind coxae IV.

■ *Hypopi* (Figs. 5-7). — (Measurements from 5 specimens). Length 269 (257-279)  $\mu$  ; width 166 (150-182)  $\mu$ . Cuticula with a thin punctation which is stronger in the opisthonotum. Pregenital shield 73 (61-79)  $\mu$  long and parallel. Pygidial shields with lateral spurs. Sternum 15 (13-17)  $\mu$  long.

Tarsi I and II 30 (28-31)  $\mu$  long. Pretarsi 4  $\mu$  and claw 10  $\mu$  long. Tarsi III and IV 38 (36-40)  $\mu$  and 12 (11-13)  $\mu$  long respectively. Setae *vi* 20 (18-23)  $\mu$  long and slightly barbed. *l*<sub>4</sub> are transformed into a spine directed backwards.

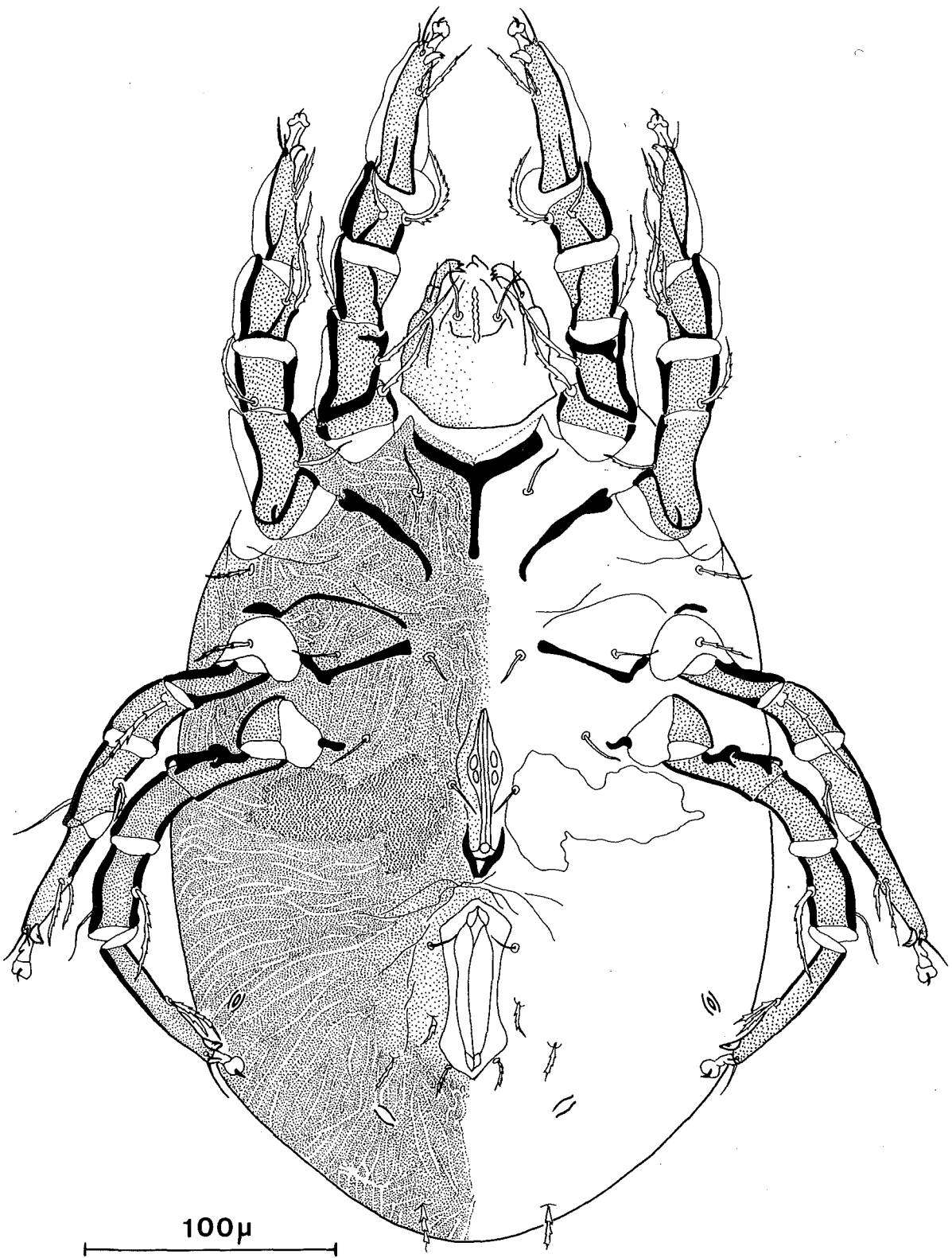


FIG. 4 : *Grammolichus eliomys* sp. n., male (ventral view).

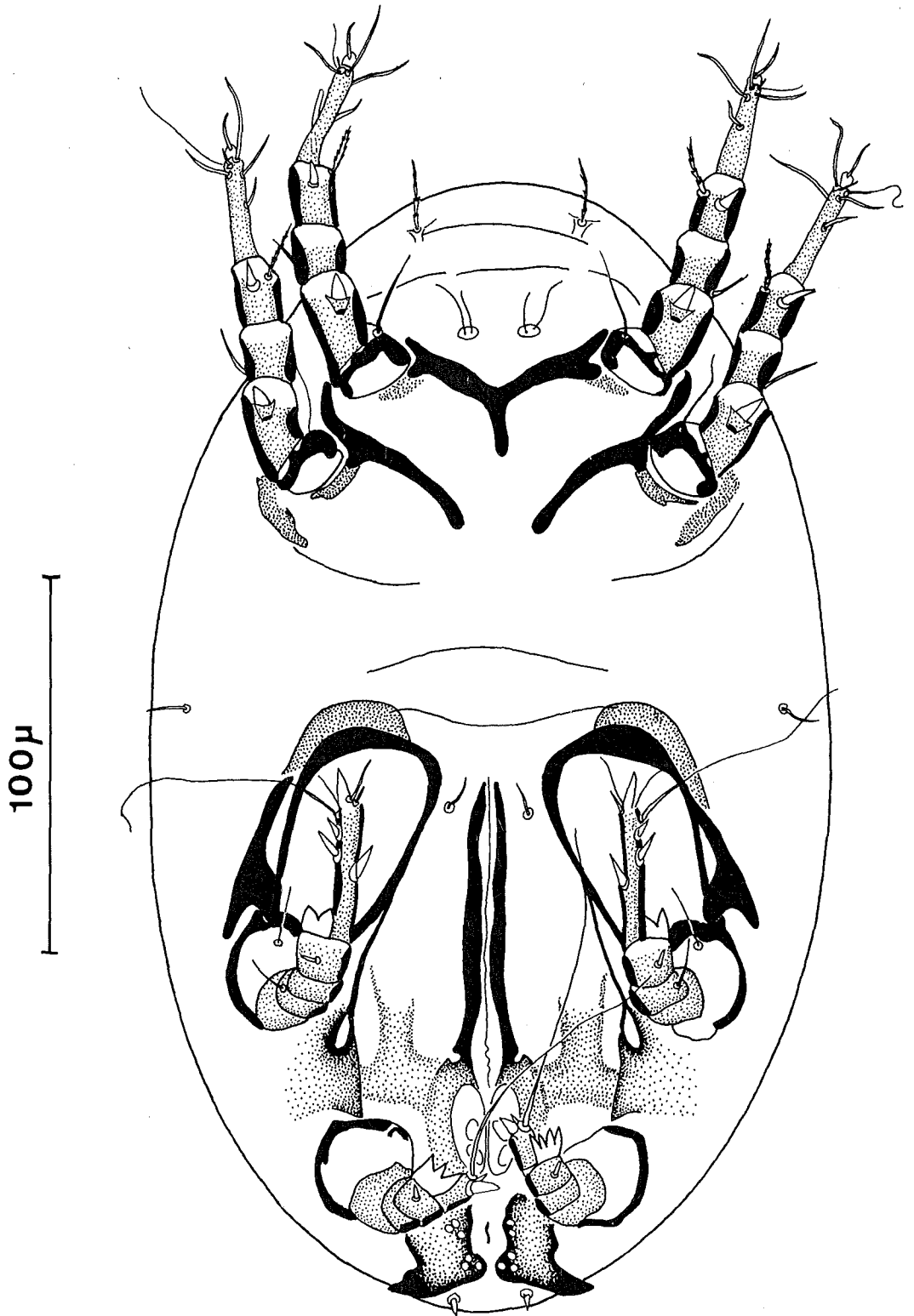


FIG. 5 : *Grammolichus eltomys* sp. n., hypopus (ventral view).

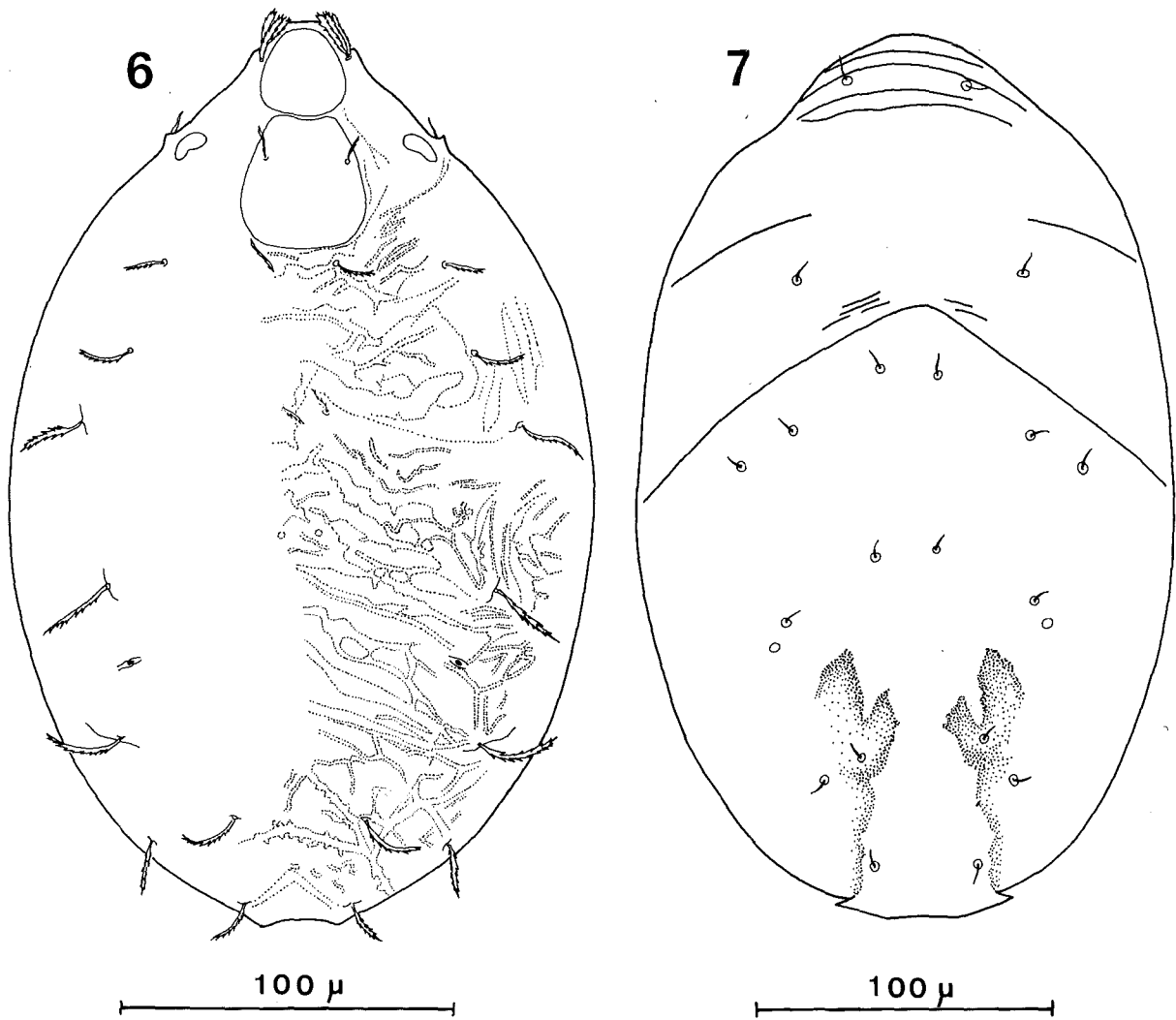


FIG. 6-7 : *Grammolichus eliomys* sp. n.  
6. — Tritonymph ; 7. — Hypopus. (Both in dorsal view).

■ *Protonymph*. — (Measurements from two specimens). Length 231-243  $\mu$  ; width 135-145  $\mu$ . Propodosomal shield as in the tritonymph. *vi* with only one digit, stout and pectinated.

One pair of genital suckers slightly behind coxae IV.

Anus with 3 pairs of anal setae.

■ *Larvae*. — (Measurements from two specimens). Length 227-240  $\mu$  ; width 132-135  $\mu$ . The propodosomal shield covers the tegmen and it is granular in all its surface with the median

fringe depressed. *vi* as in protonymph. Anus with only one pair of anal setae.

*Hosts and localities*. — Hypopi from the tail of some specimens of *Eliomys quercinus ophiusae* Thomas, from Formentera Island (Pitiusas, Spain) (October 1975).

Males, females, tritonymphs, protonymphs and larvae from the litter of a cage occupied by one dormouse captured in the same locality, at the same date.



■ *Types.* — Holotype, allotype, and paratypes (1 ♂, 4 tritonymphs, 2 protonymphs, 3 larvae and numerous hypopi) in the collection of the Department of Parasitology, University of Barcelona ; 1 ♀, 1 ♂, 1 tritonymph and 2 hypopi paratypes, in the collection of the Institute of Tropical Medicine " Prince Leopold ", Anvers.

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*Paru en septembre 1982.*

