Two New Species of the Genus *Glyphanoetus* Oudemans (Acari: Histiostomatidae)

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ABSTRACT

Two new (hypopi) species viz; *Glyphanoetus incanus* and *Glyphanoetus leptos* have been collected and described from Pakistan and Azad Kashmir.

Key words: *Glyphanoetus incanus*, *Glyphanoetus leptos*, hypopus, Pakistan

INTRODUCTION

The mites of the family Histiostomatidae occupy a highly specialized biome. They are considered of great economic importance since they infest and damage stored grain, stored cheese, flour, seeds, bulbs, tubers and dried fruits. Decaying materials and other such items are an important habitats of this group of mites. The genus *Glyphanoetus* was erected by Oudemans in 1929 and he designated *Glyphanoetus horridum* Berlese, 1913 as its type species. Mahunka (1961, 1982), Ashfaq and Chaudhri (1986) and Eraky (1994), added 1, 1 and 2 more species in this genus, respectively.

Two new species have been added this time as well. Keeping in view, the availability of corresponding characters in the early-described species, a comprehensive identification key is also prepared.

The body chaetotaxy used here has been proposed by Grandjean (1939) and Griffiths et al. (1990).

DESCRIPTIONS

1. *Glyphanoetus incanus* sp. n.

(Figs.1-9)

<Hypopus>

Dorsum (Fig. 1): Body 158 μ m long, 115 μ m wide (maximum), divided into propodosomal and hysterosomal shields. Propodosomal shield 38 μ m long, 105 μ m wide (maximum), convex antero-medially, dotted; setae 2 pairs, *sci* 13 μ m and *sce* 10 μ m long, forming a semi-circular line, middle in position; *sci-sci* 30 μ m, *sce-sce* 73 μ m and *sci-sce* 20 μ m apart. Hysterosomal shield 125 μ m long, 115 μ m wide, dotted, anterior margin with transverse broken striations. Dorsal hysterosomal shield with 11 pairs of simple setae: *c*, 25

Figs. 1-2 *Glyphanoetus incanus* sp. n. Fig. 1, dorsal body; Fig 2, ventral body.

Figs. 3-9 *Glyphanoetus incanus* sp. n. Fig 3, gnathosoma; Fig 4, coxal fields; Fig 5, attachment organ; Fig 6, Leg I; Fig 7, Leg II; Fig 8, Leg III; Fig 9, Leg IV.

μm , d_1 38 μm , e_1 35 μm , h_1 38 μm ; c_2 23 μm , cp 20 μm ; d_2 40 μm , e_2 23 μm , f_2 5 μm ; h_2 8 μm , h_3 4 μm in length; c_1 - c_1 78 μm , d_1 - d_1 24 μm , e_1 - e_1 40 μm , h_1 - h_1 32 μm , d_2 - d_2 82 μm ; c_1 - d_1 30 μm , d_1 - e_1 32 μm and e_1 - h_1 32 μm apart. Anterior margin of hysterosomal shield overlapping propodosomal shield. Overlapping area with transverse, broken striations and dots.

Venter (Fig. 2): Gnathosoma well developed, 18 μm long, shorter than tibia I, bifurcated distally, each part with a pointed bristle-like seta (*gns*) 30 μm long, equal to tarsus II in length with 1 pair of minute setae (*gnsI*) present (Fig. 3). Coxal field I (cox I) 30 μm long. Coxal apodeme II (ap II) not reaching cox III, cox III not fused, and cox IV not fused medially (Fig. 4). Cox II 10 μm long, free anteriorly, joining cox III posteriorly. Cox III 28 μm long. Genital slit presents in a triangular genital shield with 2 pairs of genital palps. Cox I without seta, cox III and IV each with a cornoidal seta (3a and 4a), cox IV also with a minute paragenital seta (*g*). Attachment organ 23 μm long, 33 μm wide, concave anteriorly and posteriorly, wavy latero-posteriorly, with radial striations; pairs of anterior and middle suckers, with radial striations, a pair of lateral and another of posterior smaller suckers (Fig. 5).

Legs (Figs. 6-9): Long and tapering. Setae and solenidia on legs I-IV segments: cox 0-0-1-3, trochanters 0-0-1-0, femora 1-1-0-1, genua 3-3-0-0, tibiae 2-2-5-6, tarsi 9-7-3-2. Tarsi I-IV each with a claw. Solenidium σ on genua I and II minute; *hT* and *gT* on tibia I 8 μm and 9 μm long, respectively. Solenidium ω_1 on tarsi I and II 18 μm and 10 μm long, respectively. Dorsal solenidium ϕ on tarsus I 55 μm long, on tarsus II 15 μm long. Seta *e* on tarsus I spoon-shaped, on tarsus II lancet-like, tarsi III and IV each with a simple seta measuring 13 μm , 8 μm , 9 μm and 10 μm in length, respectively.

Type: Holotype (hypopus), 2 paratypes, collected from Shimla Hill, Lahore from decomposing plant debris on 22/5/1995 (Sarwar) and deposited in Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad.

Remarks: Although this new species is closely related to *Glyphanoetus leptos*, new species from which it is separated on the basis of the following points;

1. Hysterosomal shield smooth in *G. leptos* but dotted in this species.
2. Attachment organ without radial striations in *G. leptos* but with striation posteriorly in this species.
3. Tarsi I, II and tibio-tarsus III with 10, 6 and 7 setae, respectively in *G. leptos* but with 9, 7 and 8 setae, respectively in this species.
4. Setae on tarsus II simple in *G. leptos* but lancet-like in this species.

2. *Glyphanoetus leptos* sp. n.

(Figs. 10-18)

<Hypopus>

Dorsum (Fig. 10): Body 143 μm long, 115 μm wide, almost hexagonal shape, divided into propodosomal and hysterosomal shields. Propodosomal shield 40 μm long, 105 μm wide, convex antero-medially, wavy antero-laterally, another margin smooth, posterior margin dotted, one semi-circular line and one concave line medially; setae 2 pairs, *sci* 10 μm and *sce* 13 μm long, forming a semi-circular line, posterior propodosoma; *sci*-*sci* 13 μm , *sce*-*sce*

Figs. 10-11 *Glyphanoetus leptos* sp. n. Fig 10, dorsal body; Fig 11, ventral body.

Figs. 12-18 *Glyphanoetus leptos* sp. n. Fig 12, gnathosoma; Fig 13 coxal fields; Fig. 14, attachment organ; Fig 15, Leg I; Fig 16, Leg II; Fig 17, Leg III; Fig 18, Leg IV.

48 μm and *sci-sce* 18 μm apart. Hysterosomal shield 113 μm long, 115 μm wide, smooth. Dorsal hysterosomal simple setae 11 pairs: c_1 36 μm , d_1 35 μm , e_1 35 μm , h_1 35 μm ; c_2 25 μm , cp 24 μm ; d_2 35 μm , e_2 25 μm , f_2 25 μm ; h_2 8 μm , h_3 5 μm in length; c_1-c_1 65 μm , d_1-d_1 25 μm , e_1-e_1 47 μm , h_1-h_1 48 μm , d_2-d_2 94 μm ; c_1-d_1 25 μm , d_1-e_1 30 μm and e_1-h_1 22 μm apart. Anterior margin of hysterosomal overlapping propodosomal shield, overlapping area with transverse, broken striations and dots.

Venter (Fig. 11): Gnathosoma well developed, extended beyond propodosomal shield, 24 μm long, about equal length to tibia I, bifurcated distally, with a pointed bristle-like seta (*gns*) 38 μm long, a pair of minute setae (*gnsI*) present (5 μm) (Fig. 12). Cox I 38 μm long, free, not forming a concave medially. Cox II 8 μm long, free anteriorly joining cox III posteriorly. Cox III 20 μm long, joining cox IV posteriorly. Cox IV small, forming inverted v-shaped over 4a (Fig. 13). Genital slit present with a conspicuous pair of cornoidal setae. Cox I without seta, cox III and IV each with 3a and 4a; cox IV with a minute g. Attachment organ 25 μm long, 33 μm wide, concave antero-medially, rounded posteriorly, approaching posterior body end, without radial striations; 1 pair of suckers rounded, another pair of suckers with radial striations. A pair lateral and another posterior (Fig. 14).

Legs (Figs. 15-18): Setae and solenidia on legs I-IV on segments: cox 0-0-1-2, trochanters 0-0-1-0, femora 1-1-0-0, genua 3-3-0-0, tibiae 2-2-5-6, tarsi 10-6-2-2. Tarsi I-IV each with a claw. Solenidion σ on genua I and II minute; *hT* and *gT* on tibia I, 8 μm and 9 μm long, respectively. Solenidion $\omega 1$ on tarsi I and II 18 μm and 10 μm long, respectively. Dorsal solenidion ϕ on tarsus I 38 μm , on tarsus II 8 μm long. Seta *e* on tarsus I spoon-shaped, on tarsi II-IV simple, 16 μm , 12 μm , 11 μm and 11 μm in length, respectively.

Type: Holotype (hypopus), collected from Kotli from fennel [*Foeniculum vulgare* (L.)] on 31.3.95 (Sarwar) and deposited in Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad.

Remarks: This new species is closely related to *Glyphanoetus micidus* Ashfaq and Chaudhri from which it is separated on the basis of the following points;

1. Propodosomal setae *sci* and *sce* in a straight line and middle in position in *G. micidus* but not so in this new species.
2. Coxal field III free posteriorly in *G. micidus* but fused with cox V in this new species.
3. Trochanter III with 2 setae in *G. micidus* but with 1 seta in this new species.
4. Seta *e* on tarsus II lancet-like in *G. micidus* but simple in this new species.

This new species is also separated from *Glyphanoetus incanus*, new species on the basis of the following differences;

1. Hysterosomal shield dotted in *G. incanus* but smooth in this species.
2. Anterior suckers with radial striations in *G. incanus* but without striations in this species.
3. Tarsi I, II and tibio-tarsus III with 9-7-8 setae, respectively in *G. incanus* but with 10-6-7 setae, respectively in this species.
4. Setae on tarsus II lancet-like in *G. incanus* but simple in this species.

KEY TO SPECIES OF THE GENUS *GLYPHANOETUS* (HYPOPI)

1. Propodosomal shield smooth2
 Propodosomal shield not smooth3
2. Coxal field II free anteriorly; seta *e* on
 tarsus II leaf like*G. pappi* Mahunka
 Coxal field II not free anteriorly; setae on
 tarsus II spoon shape*G. szunyoghyi* Mahunka
3. Dorsal setae not 12 pairs; pedipalpi not broad
 medially; coxal field III not free posteriorly.....4
 Dorsal setae 12 pairs; pedipalpi broad medially;
 coxal field III free posteriorly5
4. Setae *sci* and *sce* middle in position; anterior
 suckers with radial striations; seta *e* on tarsus
 II lancet-like; hysterosomal shield dotted*G. incanus* n.sp.
 Setae *sci* and *sce* posterior in position;
 anterior suckers without radial striations;
 seta *e* on tarsus II simple; hysterosomal
 shield smooth*G. leptos*, n.sp.
5. Propodosomal shield without dots; trochanter
 III with 1 seta; seta *e* on tarsus III simple.....*G. horridum* Berlese
 Propodosomal shield with dots; trochanter III
 with 2 setae; seta *e* on tarsus II lancet-like..... *G. micidus* Ashfaq and Chaudhri

REFERENCES

- Ashfaq, M. and W.M. Chaudhri (1986): A new (Hypopi) species of genus *Glyphanoetus* Oudemans (Acarina: Histiotomatidae) from Pakistan. *Sarhad J. Agric.*, 2: 211-217.
- Berlese, A. (1913): Acari Nuovi, *Redia*, 9: 104-105.
- Eraky, S.A. (1994): Three new anoetid mites extracted from animal excrement and from garlic (Acarina: Anoetidae). *Folia Entomol., Hung.*, 55: 217-223.
- Griffiths, D. A., W. T. Atyeo, R. A. Norton and O. A. Lynch (1990): The idiosomal chaetotaxy of astigmatid mites. *J. Zool., Lond.* 220: 1-32.
- Mahunka, S. (1961): Wissenschaftliche Ergebnisse der ersten ungarischen zoologischen Expedition in Ostafrika. 5. Acarina : Acaridae and Anoetidae. *Annal. Hist. Natl. Mus. Nat. Hung.*, 53: 525-530.
- Mahunka, S. (1982): Two new mites from the Juan Fernandez Islands (Acari: Acarida and Oribatida). *Folia Entomol. Hung.*, 43: 63-68.
- Oudemans, A.C. (1929): Acarologische Aanteekeningen, 97. *Entomol. Ber.*, 7: 449-452.