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A REVISION OF THE PALEARCTIC GENUS COMETACARUS
(ACARINA : GLYCYPHAGIDAE),
WITH DESCRIPTION OF A NEW SPECIES

BY Elisaveta B. ANGELKOVA * and Eva ŽDÁRKOVÁ **

The genus Cometacarus Zachvatkin, 1936, comprises rare and taxonomically poorly known species presently only known from a few European localities. The purpose of the present paper is to summarize our present knowledge of its taxonomy and to describe an additional species from Bulgaria.

Cometacarus Zachvatkin, 1936

ZACHVATKIN, 1936 : 265. Type species : Cometacarus smirnovi Zachvatkin, 1936 (nomen nudum) and 1941, by original and subsequent (ZACHVATKIN, 1941 : 306) designations.

Without a crista metopica.

Setae vi are separated from each other ; ve arise close together.

Some of the dorsal setae are 1.7 — 3 times longer than the body.

Tarsi without a pectinate subtarsal scale. No claws are present.

Ventral seta on femur I pectinated or modified into a great scale with sharp toothed margin.

Apodemes III have an anterior directed process. Apical part of genu extended into a ventral point particularly conspicuous in male.

Cometacarus setosus (Koch, 1841)

Acarus setosus KOCH, 1841 : 3.

Glycyphagus setosus, OUDEMANS, 1907 : 60 (nec 1905 : 127).


The type material of C. setosus is apparently lost and the description too incomplete. The most useful character given is that some setae on the hind margin of the body are three times longer than the body itself. KOCH (1841) also presented a good figure of the mite. OUDEMANS

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(1905) found a mite of which he wrote as "of having found back again the lost Acarus setosus of C. L. Koch." Later (Oudemans, 1907) he came to the conclusion that this individual represents an undescribed species, for which he proposed a new name, Glycyphagus pilosus (presently considered as a species of Glycyphagus, but apparently never found again). At the same time Oudemans (1907) found several specimens of another species, presumably the true Acarus setosus of Koch. He re-described the last mentioned species to much detail. (Under the name Glycyphagus setosus (C. L. Koch). Yet Zachvatkin (1936, 1941) who included G. setosus into his new genus Cometacarus, believed that the specimens examined by Oudemans (1907) represented a species different from C. setosus and proposed for them a new name, C. oude­mansi. However, Zachvatkin did not see Koch types nor Oudemans specimens. He also gave no reasons why he thought that they represent two different species. Our opinion therefore is that Zachvatkin's conclusion is poorly argued and the replacement of the names almost certainly unjustified.

Also we had the opportunity to examine three specimens of C. setosus from Oudemans collection mentioned in his 1907 paper. Unfortunately, they are very poorly preserved, but we found no characters indicating that they are not conspecific with the species described by Koch. We therefore consider Zachvatkin's species C. ouudemansi as a synonym of C. setosus.

*Cometacarus setosus* was probably found only twice, always in Germany, in buildings, in debris under old hay.

**Cometacarus smirnovi** Zachvatkin, 1941

*Cometacarus smirnovi*, ZACHVATKIN, 1936 : 265 ; nomen nudum.
*Cometacarus smirnovi*, ZACHVATKIN, 1941 : 308.

This species is only known from the USSR. It was found in the seeds of *Pastinaca sativa* in a warehouse.

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**Cometacarus rhodopensis**, new species

(Fig. 1-5)

Material: Holotype (female), collected on 30th, May 1979; E. Angelkova collector; in collection of Institute of Zoology, Sofia, Bulgaria.

Paratypes (8 females + 4 males); the same data; 5 ♀ + 3 ♂ in collection of Institute of Zoology, Sofia, Bulgaria; 3 ♀ + 1 ♂ in collection of Institute of Food Industry, Prague, Czechoslovakia.

Habitat: Hay in mountainous hay-barn, 1 100 m above sea level.

Locality: South slopes of Rhodopi mountains, near Zlatograd, Bulgaria.

### Tab. 1. — Length (in μm) of the body and body setae of *Cometacarus rhodopensis* n. sp.

<table>
<thead>
<tr>
<th></th>
<th>Holo-type</th>
<th>Paratypes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>females</td>
<td>males</td>
</tr>
</tbody>
</table>

| Idiosoma | 446 | 392 | 439 | 425 | 385 | 397 | 437 | 422 | 380 | 365 | 310 | 361 |
| Gnat.    | 534 | 534 | 480 | 534 | 484 | 458 | 458 | 489 | 484 | 434 | 415 | 372 | 424 |
| ve        | 176 | 157 | 185 | 173 | 175 | 160 | 167 | 174 | 147 | 160 | —   | —   |
| vi        | 81  | 69  | 69  | 66  | 56  | 62  | 62  | 68  | 56  | 56  | 50  | 72  |
| se        | 173 | 166 | 148 | 166 | 157 | 174 | 174 | 195 | 186 | 175 | 174 | 150 | 173 |
| si        | 251 | 223 | 193 | 226 | 227 | 217 | 223 | 250 | 223 | 225 | 211 | 211 | 220 |
| sh        | 166 | 150 | 155 | 173 | 161 | 179 | 167 | 148 | 136 | 161 | 157 | —   | —   |
| h         | 251 | 245 | 210 | 233 | 248 | 292 | 292 | 248 | 229 | 248 | 248 | 192 | 235 |
| d1        | 298 | 289 | 270 | 308 | 347 | 310 | 341 | 347 | 310 | 322 | 244 | 321 | 244 |
| d2        | 283 | 314 | 243 | 308 | 312 | 310 | 335 | 345 | 316 | 385 | 310 | 300 | 323 |
| d3        | 581 | 609 | —   | 634 | 620 | 638 | 638 | 660 | —   | 630 | 625 | 525 | —   |
| d4        | 911 | —   | 785 | —   | 925 | 744 | 744 | 900 | —   | 830 | —   | 879 | —   |
| l1        | 267 | 229 | 220 | —   | 254 | —   | 272 | —   | 229 | 223 | 254 | 168 | 220 |
| l2        | 267 | 267 | 223 | 273 | 291 | 280 | 310 | 279 | 267 | 360 | 267 | 229 | 267 |
| l3        | 273 | 273 | —   | 270 | 298 | 296 | 298 | 291 | 267 | 273 | —   | 236 | —   |
| l4        | 424 | 440 | 308 | 471 | 477 | 412 | 496 | 477 | 458 | —   | 360 | —   | —   |
| l5        | 352 | 323 | 283 | 326 | 332 | 332 | 353 | 360 | 322 | 304 | 279 | 315 | —   |
| l6        | 675 | 675 | 612 | —   | 676 | —   | —   | —   | 527 | 670 | —   | —   | 659 |

FEMALE (Holotype): The body is oval, whitish cuticle dotted with small papillae.

Length and width of idiosoma: 446 μm and 250 μm respectively. Length of the whole body including chelicerae: 534 μm.

**Dorsal side** (Fig. 1): All dorsal setae 1 densely pectinate. *d* 4 and *l* 4 are the longest setae, 1.7 and 1.3 times respectively longer than body. *vi* on

1. Terminology of setae is according to Griffiths (1977).
FIG. 1: Cometesurus rhodopensis n. sp., female, dorsal side.
Fig. 2: *Cometocarthus rhodopensis* n. sp., female, ventral side.
the front margin of idiosoma, widely separated. 

behind vi, close to each other. si and se in transverse row across idiosoma. Supracoxal seta much branched bifid rod with short common stem. The bases of humeral setae (sh, h) and 1st lateral seta form a triangle on each side of idiosoma. There are 5 pairs of dorsal (d₁-d₅) and lateral (l₁-l₃) setae on dorsal side. d₁ are in the middle of the body, posterior to humeral setae. d₂ are shifted back, their bases and bases of d₃ in one transversal line. d₄ and d₅ on the hind margin of the body.

Ventral side (Fig. 2) : The apodemes of legs I meet to form a short sternum. Apodemes II well developed. Apodemes III and IV slender, apodemes III each have an anteriorly-directed process. The genital opening is between coxae III and IV. The genital folds are developed with two pairs of genital sense organs. Epigynium developed. Two pairs of genital setae lie on each side, the third pair of genital setae is inserted just before hind end of the genital opening. Two pairs of setae are on each side of the anterior end of the anus. A tubular bursa copulatrix projects from the hind margin of the body.

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Fig. 3 A : "Cometacarus rhodopensis n. sp., male, leg I.
B : "Cometacarus rhodopensis n. sp., leg II.
C : "Cometacarus rhodopensis n. sp., female leg I.
The chelicerae are slender, the movable limb bears 3 large teeth and 3 teeth are present on the fixed arm. A long interstice is between the first and the remaining two teeth.

**Legs I** (Fig. 3 C): Tarsal setae are concentrated on the apical half of the tarsus. \( \omega_1 \) has a pointed end, \( \omega_2 \) is in a form of needle. Solenidion \( \varphi \) reaches apex of the tarsus. On the ventral side of tibia there are two pectinate setae. \( \alpha_2 \) on genu is 6 times longer than \( \sigma_1 \). Genu bears one ventral and one dorsal pectinate setae. Femur has one ventral pectinate seta.

**II**: Solenidion \( \varphi \) is shorter than the one on leg I, it reaches 2/3 of tarsus. \( \alpha_2 \) is shortened, \( \sigma_1 \) is missing. Others setae as on leg I.

**III**: \( \omega_1 \) and \( \omega_2 \) are missing. \( \varphi \) is shortened, it reaches 1/3 of tarsus. Tibia has one ventral pectinate seta. There is only \( \alpha_2 \) and one pectinate seta on genu. Femur has no setae.

**IV**: \( \varphi \) is very short, it reaches 1/7 of tarsus. Genu has no setae. Femur has one pectinate seta.

**MALE** (Fig. 4, 5): Length and width of idiosoma: 355 \( \mu \)m and 250 \( \mu \)m respectively. Length of the whole body including chelicerae: 424 \( \mu \)m. The male differs from a female in the size of the genu is 6 times longer than \( \sigma_1 \). Femur has no setae. Some setae on legs I, II, III and IV. Epiandrium developed. One pair of setae lie on each side of the anterior end of anus.

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Authors wish to express their special thanks to Dr. J. ZUSKA, Research Institute of Food Industry, Prague, for his valuable critical comments, to Dr. A. M. HUGHES, London, for the careful reading of the manuscript and to Dr. L. VAN DER HAMMEN for the loan of the type material from OUEDEMANS collection.

**KEY TO THE **Cometacarus** SPECIES** (Tab. 2)

1 (2) Small species. Length of the body of a male 200 \( \mu \)m, female 340 \( \mu \)m. Ve the same length as \( s_1 \) and 1/3 longer than \( s_e \). \( d_2 \) 2.5 – 3 times shorter than \( d_3 \). Pectinate setae on legs large, \( \alpha_2 \) on genu I, as long as tarsus I. A male without a toothed scale on femurs I and II.

**Cometacarus setosus** (Koch)

2 (3) Large species. A length of the body of a male 370-430 \( \mu \)m, female 450-530 \( \mu \)m. Male with a toothed scales on femurs I and II. \( d_2 \) 1.5 — 2 times shorter than \( d_3 \). \( \alpha_2 \) on genu I 1.7 — 2 times shorter than tarsus I.

<table>
<thead>
<tr>
<th>Characters</th>
<th>C. setosus</th>
<th>C. spinipes</th>
<th>C. rhodopensis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the body</td>
<td>( \sigma )</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>( \varphi )</td>
<td>340</td>
<td>500</td>
<td>495</td>
</tr>
<tr>
<td>( s_e )</td>
<td>1/3 longer than ( s_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( s_1 )</td>
<td>as long as ( s_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( d_2 )</td>
<td>3 ( \times ) shorter than ( d_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( d_3 )</td>
<td>2.5 ( \times ) longer than ( d_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \sigma_1 )</td>
<td>as long as tarsus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. We had the opportunity to see material of Glycyphagus setosus (C.L.K.) 2 \( \sigma \), 1 \( \sigma \), from the OUEDEMANS collection. All 3 specimens unfortunately have broken and lost almost all setae, one female is damaged. We could measure the length of idiosoma and body of 1 female and 1 male only. Male: length of idiosoma and body — 163 \( \mu \)m and 200 \( \mu \)m respectively; female: 276 \( \mu \)m and 340 \( \mu \)m respectively.
FIG. 4: *Cometacarus rhodopensis* n. sp., male. dorsal side.
Fig. 5: *Cometacarus rhodopensis* n. sp., male, ventral side.
3 (4) Ve 2 times shorter than se and 3 times shorter than si. w1 on tarsi I and II rounded. The genital folds of females with one pair of genital sense organs. 

*Cometacarus smirnovi* Zachvatkin

4 (3) Ve as long as se and 1/3 shorter than si. w1 on tarsi I and II with a pointed end. The genital folds of females with two pairs of genital sense organs. 

*Cometacarus rhodopensis* n. sp.

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