

Contribution to the knowledge of Phthiracaroida (Acari, Oribatida) of Australia

Wojciech NIEDBAŁA

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Abstract. Description of three new species of phthiracaroid ptyctimous mites from Australia. is dedicated to an outstanding Polish zoologist Prof. dr hab. Andrzej SZEPTYCKI: *Steganacarus (Rhacaplacarus) szeptyckii* sp. n., *Notophthiracarus szeptyckii* sp. n., and *Atropacarus (Hoplophorella) szeptyckii* sp. n.

Key words: Acari, Oribatid mites, Phthiracaroida, new species, Australia.

Wojciech NIEDBAŁA, Department of Animal Taxonomy and Ecology, Faculty of Biology, Adam Mickiewicz University, Umultowska 89, 61-614 Poznań.
E-mail: wojciech.niedbala@amu.edu.pl

I. INTRODUCTION

Phthiracaroida are ptychoid oribatid mites and one of two superfamilies of Euptyctima, whose propodosoma folds close to opisthosoma in order to protect the epimeral region and legs. Phthiracaroida have globose notogaster, ventral region U-shaped, genitoaggenital and anoadanal plates well separated but closely adjoining each other. They are typical soil mites and as secondary decomposers and macrophytophages they play an important role in mechanical fragmentation of organic matter (ILLIG et al. 2005).

The aim of the present paper is to provide description of new species of phthiracaroid mites collected from the soil samples obtained from Dr. R. B. HALLIDAY (Australian Commonwealth Scientific and Research Organization, Canberra, Australia) (CSIRO).

The mites were macerated in lactic acid and mounted on slides in glycerine. Observations, measurements and illustrations were made using a standard light microscope equipped with a drawing attachment. Terminology is based on that of NIEDBAŁA (2000). All measurements are in micrometres.

These three species represent three different genera of Steganacaridae NIEDBAŁA, 1986: *Steganacarus* EWING, 1917, *Notophthiracarus* RAMSAY, 1966 and *Atropacarus* EWING, 1917.

Steganacarus (Rhacaplacarus) is a subgenus represented by fewer than 20 species in the Neotropical and Afrotropical Regions. As yet in Australian Region only three species of this subgenus have been found. *Notophthiracarus* is a genus represented in all zoogeographical regions of southern hemisphere, however, in Australia it is the most abundant. The number of species known from

Australia reaches over 60 and is very close to the number of species known from all other zoogeographic regions. *Atropacarus* (*Hoplophorella*) is a subgenus occurring in southern hemisphere. Five species have been hitherto known from Australia. This subgenus is the most speciose in the Neotropical and Afrotropical Regions.

The species are named in honour of late Prof. Andrzej SZEPTYCKI, an outstanding zoologist, entomologist, the expert on Apterygota, my dear colleague and tutor.

II. TAXONOMY

Steganacarus (*Rhacaplacarus*) *szeptyckii* sp. n.

(Figs 1, A-I)

D e s c r i p t i o n. Measurements of holotype: prodorsum: length 358, width 263, height 126, sensillus 131, setae: interlamellar 368, lamellar 136, rostral 106; notogaster: length 656, width 444, height 424, setae: c_1 404, $c_1/c_1-d_1 = 2.6$, h_1 389, p_1 409; genitoaggenital plate 172×141 , anoadanal plate 257×146 .

Prodorsum with long lateral carinae. Strong roll above bothridium. Sigillar fields weak, narrow, median shorter than laterals. Sensilli long rod-like, without head, covered with cilia. Interlamellar setae long, covered with few cilia, flagellate at distal end. Lamellar and rostral setae shorter not flagellate covered with numerous cilia. Exobothridial setae smooth.

Notogaster with 15 pairs of long setae flagellate distally and covered with few cilia. Seta d_2 and e_2 slightly shorter than other setae. Setae c_1 and c_3 inserted at anterior border, setae c_2 slightly remote from the border. Three pairs of lyrifissures ia , im , ip present. Vestigial setae f_1 posterior of h_1 setae.

Ventral region. Setae h of mentum as long as the distance between them. Formula of genital setae: 4+2: 3. The shape of setae of anoadanal plates the same as interlamellar and notogastral setae. Seta ad_1 and ad_2 longer than anal and ad_3 setae.

Chaetome of legs of "complete type", I: 1-4-2(2)-5(1)-17(3)-1, II: 1-3-2(1)-3(1)-12(2)-1, III: 2-2-1(1)-2(1)-10(0)-1, IV: 2-2-2(0)-2(1)-10(0)-1 (solenidia in parenthesis). Setae d of femora I bifurcated and inserted on distal end of article.

Holotype and eight paratypes: Australia, DOR 003 - NSW Dorrigo NP, Never never camping, rainforest, sieved litter, 16. August 2007, leg. J. BŁOSZYK and S. KONWERSKI. Holotype and four paratypes in CSIRO, four paratypes in DATE (Department of Animal Taxonomy and Ecology, Faculty of Biology, Adam Mickiewicz University, Poznań, Poland).

Comparison. The new species is easily distinguishable from congeners by the presence of long and flagelliform interlamellar, notogastral and anoadanal setae covered with few cilia and long sensilli covered with numerous cilia. It differs from the most similar *Steganacarus* (*Rhacaplacarus*) *diaphoros* NIEDBAŁA, 2000 from northern Australia in the length of notogastral setae, presence of short, spiniform setae cp , d_2 , e_2 and p_4 and of other setae, which are long and flagelliform.

D i s t r i b u t i o n. Australia.

Notophthiracarus *szeptyckii* sp. n.

(Figs 2, A-G)

D e s c r i p t i o n. Measurements of holotype: prodorsum: length 333, width 242, height 126, sensillus 164, setae: interlamellar 202, rostral 106; notogaster: length 656, width 485, height 404, setae: c_1 182, h_1 139, p_1 152; genitoaggenital plate 172×131 , anoadanal plate 227×131 .

Colour light brown, surface of body covered with concavities.

Prodorsum without lateral carinae. Sigillar fields and posterior furrows indiscernible. Sensilli very long, without head, covered with small cilia at distal end. Interlamellar setae very long, rigid,

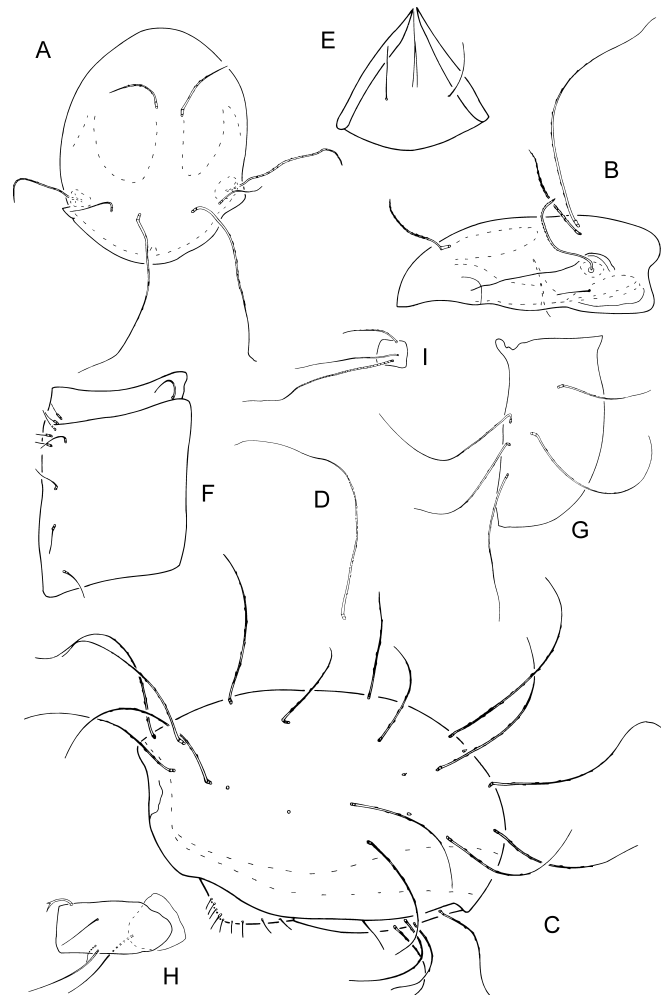


Fig. 1. *Steganacarus (Rhacaplaccarus) szeptyckii* sp. nov. (holotype): A – prodorsum, dorsal view, B – prodorsum, lateral view, C – opisthosoma, lateral view, D – seta c_1 , E – mentum of infracapitulum, F – genitoaggenital plate, G – anoadanal plate, H – trochanter and femur of leg I, I – tibia of leg IV.

erect, covered sparsely with small cilia at distal half. Lamellar and exobothridial setae vestigial. Rostral setae similar to interlamellar setae, also erect but shorter.

Notogaster with rigid, thick setae, covered sparsely with small cilia at distal half. Setae c_1 as long as distance between c_1 and d_1 . Setae c_1 and c_3 situated near anterior border, setae c_2 remote from border. Vestigial setae f_1 located posteriorly to setae h_1 . Two pairs of lyrifissures ia and im present.

Ventral region. Setae h of mentum as long as the distance between them. Nine pairs of genital setae present with formula: 6: 3. Anoadanal plates with 2 anal and 3 adanal rigid and rough setae, setae ad_1 and ad_2 thicker and longer than other setae, setae ad_3 the smallest.

Chaetome of legs of complete type. Setae d of femora I slightly remote from distal end of segment.

Holotype and two paratypes: Australia, ANIC 246d. NSW Clyde Mt., 700 m, Rainforest, 14 April 1979, coll. E. F. RIEK. Holotype and one paratype in CSIRO, one paratype in DATE.

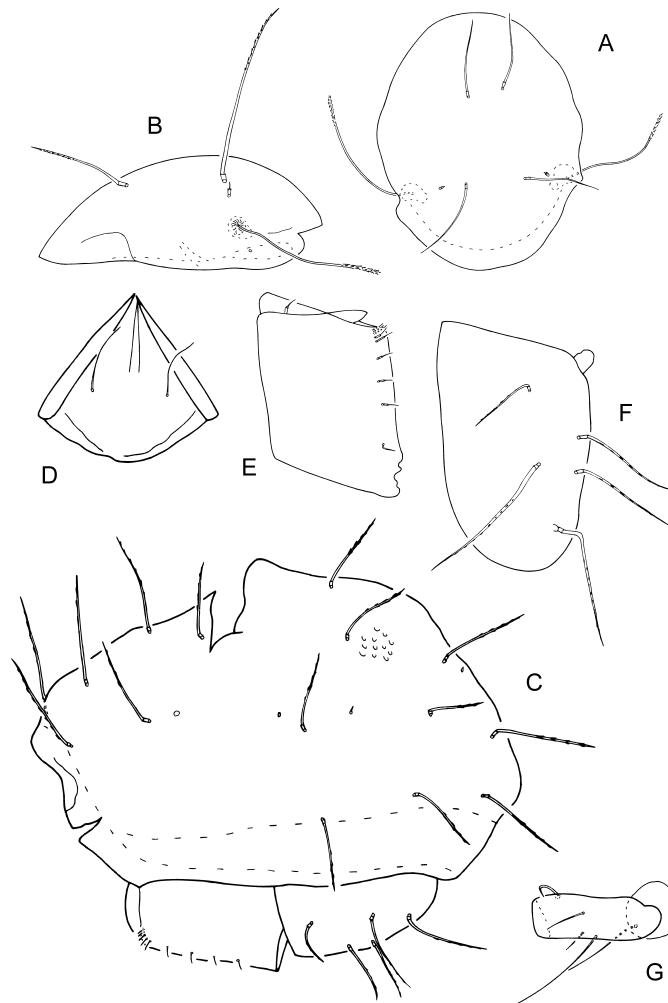


Fig. 2. *Notophthiracarus szeptyckii* sp. nov. (holotype): A – prodorsum, dorsal view, B – prodorsum, lateral view, C – opisthosoma, lateral view, D – mentum of infracapitulum, E – genitoaggenital plate, F – anoadanal plate, G – trochanter and femur of leg I.

Comparison. The new species is slightly similar to the four Australian species of *Notophthiracarus* in the length of sensilli and notogastral setae: *N. shealsi* (LEE, 1981), *N. lee* NIEDBALA, 1987, *N. perezinigo* NIEDBALA, 1987, *N. longisetosus* NIEDBALA, 2000. All these species can be distinguished by the bifurcate setae *d* of femora I. Moreover, *N. shealsi* has developed lamellar and exo-bothridial setae, shorter, not erect rostral setae, shorter *ad*₃ setae of anoadanal plates and different formula of genital setae: 4: 3. *N. lee* has different shape of sensilli, developed lamellar setae, not rigid and erect rostral setae and different formula of genital setae: 5: 4. *N. perezinigo* has slightly different shape of notogastral setae and setae *ad*₃ of anoadanal plates, vestigial setae *f*₁ situated anteriorly of *h*₁ setae and different formula of genital setae: 5: 4. *N. longisetosus* has longer lamellar and especially notogastral setae, all four pairs of lyrifissures and different formula of genital setae: 4: 5.

D i s t r i b u t i o n. Australia.

Atropacarus (Hoplophorella) szeptyckii sp. n.

(Figs 3, A-G)

D e s c r i p t i o n. Measurements of holotype: prodorsum: length 333, width 217, height 96; sensillus 131, setae: interlamellar 23, lamellar 13, rostral 43; notogaster: length 606, width 475, height 414; setae: c_1 139, h_1 119, p_1 121, $c_1/c_1-d_1 = 0.76$; genitoaggenital plate 171×106 ; anoadanal plate 172×101 .

Colour brown. Surface of body covered with strong integument, foveolate.

Prodorsum with well developed median crista. Sigillar fields weakly expressed, narrow, median longer than laterals. Lateral carinae of medium length. Sensilli very long, smooth, slightly swollen at distal end, with undulate margin. Interlamellar and lamellar setae very short, needleform, smooth. Rostral setae spiniform, rough. Exobothridial setae vestigial.

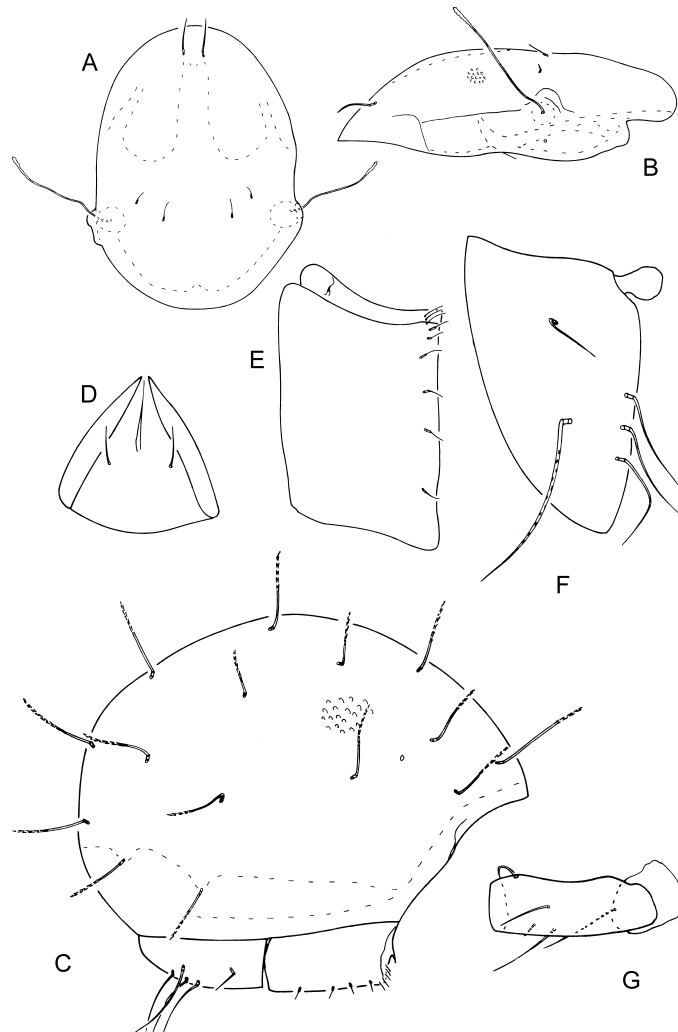


Fig. 3. *Atropacarus (Hoplophorella) szeptyckii* sp. nov. (holotype): A – prodorsum, dorsal view, B – prodorsum, lateral view, C – opisthosoma, lateral view, D – mentum of infracapitulum, E – genitoaggenital plate, F – anoadanal plate, G – trochanter and femur of leg I.

Notogaster with 15 pairs of rigid setae of medium length ($c_1 < c_1 - d_1$), covered with small cilia in distal half. Setae c_1 and c_3 positioned near anterior margin, setae c_2 far remote from margin. Lyrifissures and vestigial setae invisible because thick integument.

Ventral region; setae h of mentum slightly shorter than distance between them. Genitoaggenital plates with 9 pairs of setae with formula: 6: 3. Anoadanal plates each with 5 well-developed setae. Setae ad_1 and an similar in length, rough, setae ad_2 the longest, rough, setae ad_3 , the shortest, needleform, smooth.

Legs. Formulae of setae and solenidia of complete type. Setae d on femora I almost at distal end of article.

Holotype and 10 paratypes: Australia, ANIC 568, QLD Broken R. Eungella NP, 21.10S 148.31E, rainforest, 700 m a.s.l., 10 December 1976, leg. R. W. TAYLOR and T. A. WEIR; 3 paratypes – ANIC 564, as above, 21.09S 148.30E, 760 m a.s.l., 11 November 1976. Holotype and seven paratypes in CSIRO, six paratypes in DATE.

Comparison. This species differs from other *Atropacarus* (*Hoplophorella*) species in the following character states in combination: weak median carina of prodorsum, very long sensilli, interlamellar and lamellar setae very short, needleform, notogastral setae rigid, covered with small cilia in distal half, setae ad_2 rough, the longest, setae ad_3 small, smooth, the position of setae d on femora I at distal end. *Atropacarus* (*Hoplophorella*) *buffaloensis* NIEDBALA, 2006 from Victoria shares four of these characters: presence of median crista of prodorsum, similar shape of sensilli, notogastral setae and setae on anoadanal plate which are needleform; other characters are different: very long interlamellar setae, distance between rostral setae similar to distance between interlamellar setae, setae h of mentum longer than distance between them, setae d of femora I bifurcate.

D i s t r i b u t i o n. Australia.

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