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*Neotarsonemoides adae* n. sp., n. gen.,  
(Acari: Tarsonemidae) from Poland

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(With 6 figures)

Abstract

Description and illustration of new genus *Neotarsonemoides* with new species *N. adae* is given and systematic position of new taxa is discussed.

*Neotarsonemoides* n. gen.

Type species: *Neotarsonemoides adae* n. sp.

Diagnosis: The females of *Neotarsonemoides* n. gen. are unique among Tarsonemidae CANESTRINI & FANZAGO, 1876, possessing among others the following apomorphous features (Figs. 2, 6): leg IV very short, consisting of only two well developed movable segments (trochanter and joined tarsus, tibia, genu and femur). The outline between tibiotarsus and femurogenu is only slightly marked. There are only three setae *tc''*, *v'Ti*, *v'F* present on the movable segments of leg IV. Seta *v'G* absent. Metapodosomal plate forms two flaplike, rounded processes on the level of trochanteres IV.

*Neotarsonemoides adae* n. sp.

Female: Body length 120-128  $\mu\text{m}$  (dimensions among holotype and four paratypes), body width 61  $\mu\text{m}$ .

Dorsal side (Fig. 1): Idiosoma 112-120  $\mu\text{m}$  long with characteristic granulation and striation. Sensillus 16-18  $\mu\text{m}$  long, capitate without distinct pedicel, sharpened on the end, with numerous little spines. Main tracheal trunks equally narrow. Rostral shield very wide and short. Posterior

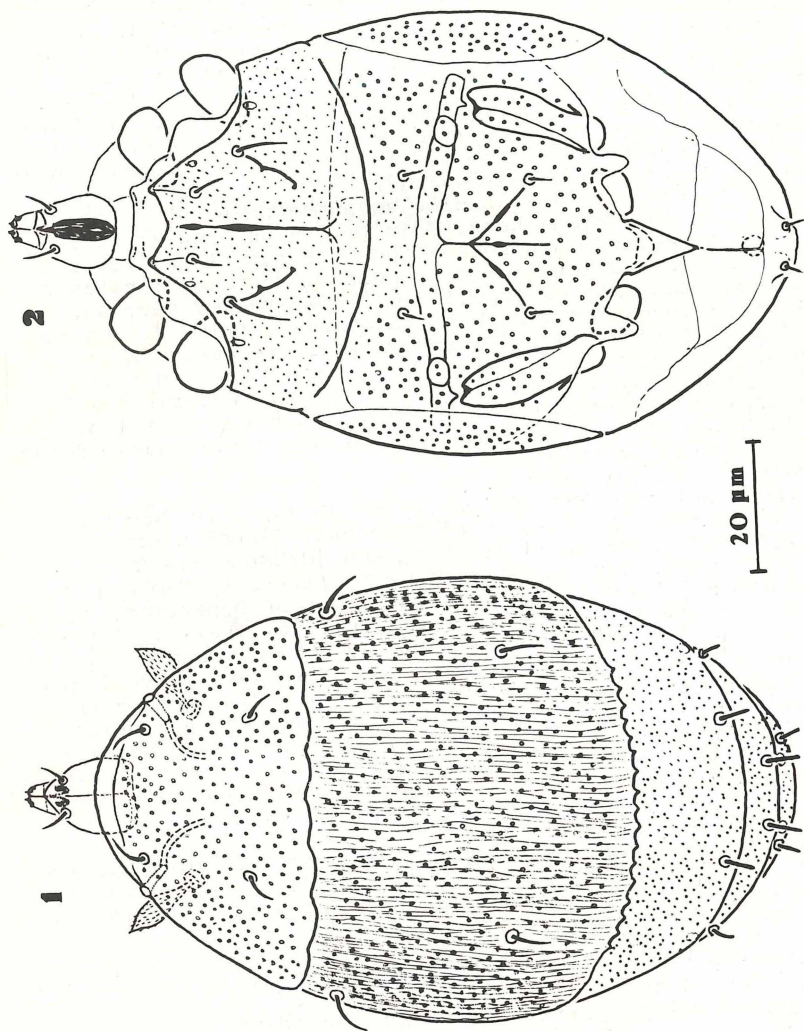
edge of propodosomal plate wavy. Posterior edge of tergite C with numerous teeth. Lengths of setae in  $\mu\text{m}$ :  $v_1 = 7$ ;  $sc_2 = 5,5-6$ ;  $c_1 = 6-6,5$ ;  $d = 5-5,5$ ;  $e = 3-3,5$ ;  $f = 5,5$ ;  $h = 3$ . Distance among setae in  $\mu\text{m}$ :  $v_1-v_1 = 20-21$ ;  $sc_2-sc_2 = 28-29$ ;  $c_1-c_1 = 41,5-43$ ;  $d-d = 22,5-24$ ;  $h-h = 9,5-10$ ;  $f-f = 18-18,5$ ;  $v_1-sc_2 = 19-20$ . Setae  $v_1$ ,  $sc_2$ ,  $c_1$ ,  $h$  smooth, hair-like, fine endings. Setae  $v_1$  placed on the level of stigmatae, longer than setae  $sc_2$ . Setae  $c_2$  placed  $14,5 \mu\text{m}$  from posterior margin of tergite C. Setae  $d$ ,  $e$ ,  $f$ ,  $h$ , stiff, stout, coarse.

Ventral side (Fig. 2): Gnathosoma  $19-20 \mu\text{m}$  long,  $13,5-14 \mu\text{m}$  wide, triangular in outline. Pharynx  $12-12,5 \mu\text{m}$  long,  $3,5-4 \mu\text{m}$  wide, almost equally narrow, with somewhat sclerotized walls and a pair of very small glandular structures. Palpi cylindrical, approximate. Cheliceral levers short, directed anteriorly. Cheliceral stylets short, inconspicuous and retractable.

Propodosomal plate:  $31-32 \mu\text{m}$  long,  $25,5-26,5 \mu\text{m}$  wide, with granulation. Its edge almost straight between ends of apodemes I and II. Anterior edge of propodosomal plate, with two teeth between ends of apodemes I, and with wide layer of characteristically formed integument. Apodemes relatively distinct. Anteromedian apodeme extending beyond apodemes II, not uniting with transverse apodeme, with two thickenings between apodemes I and II. Apodemes II not uniting with anteromedian apodeme with nodules in its middle part, ending with a nodule and recurved in characteristic way. Transverse apodeme strong without weakened area.

Metapodosomal plate with ornament similar to those on dorsal side of idiosoma. Posteromedian apodeme with thickenings, bifurcated at anterior extremity, not bifurcated posteriorly, not extending beyond the level of setae 3b, uniting with apodemes III and IV. Apodemes III very strong and wide, with characteristic thickenings placed anteromedially in relation to trochanteres III, extending laterally, distinctly beyond anterior extremities of trochanteres III and uniting in median part of the body. Apodemes IV almost straight, with thickenings in their middle part extending posterolaterally to setae 3b. Posteromedian lobe of metapodosomal plate ("tegula") triangular, sharply ended  $13-13,5 \mu\text{m}$  long and  $9-9,5 \mu\text{m}$  wide. Metapodosomal plate with characteristic rounded lobes on the levels of trochanteres IV. Lateral genital plate cut posteriorly. Medial genital plate divided along axis of the body. Setae 1a ( $2,5-4 \mu\text{m}$  long) fine whiplike, sharply ended, placed distinctly beyond apodemes I in distances  $10,5-11 \mu\text{m}$  between them. Setae 2a ( $7 \mu\text{m}$  long) fine, whiplike, sharply ended, placed on posterior ends of apodemes II, in distance  $21,5-22 \mu\text{m}$  between them. Setae 3a ( $4 \mu\text{m}$  long), 3b ( $4 \mu\text{m}$  long) and ps ( $3,5 \mu\text{m}$  long) short, rather stiff. Distance between setae ps a little wider than width of tegula.

Legs (Figs. 3,4,5,6): Excluding trochanters leg I and III slightly longer than leg II. Leg I and III with one claw but leg II with two claws. Claws on leg I-III almost equal size, moderately large, hooked, well developed. Pulvilli on legs I



Figs. 1-2: *Neotarsonemoides adae* n. sp., n. gen., female. - 1: dorsal side; 2: ventral side.

to III membranous, well developed. Setae  $u'$  of leg I to III almost equal size, spinlike with rounded ends. Formula of setae on particular segments of leg I: 4-4-8+9. Solenidion  $\omega = 4,8-5,2 \mu\text{m}$  long, placed in  $1/3$  proximal part of the segment. Setae  $tc'$  and  $tc''$  placed in the middle part of tibiotarsus are distinctly longer than setae  $p'$  and  $p''$  placed on the top of the segment. Solenidion  $\phi_1 = 2,5 \mu\text{m}$  long. Solenidion  $\phi_2$  with swollen end. Eupathidium  $k$  rodlike. Femur with sharp processes similar to those of *Tarsonemus lucifer* (SCHAARSCHMIDT, 1959). Formula of setae on particular segments of leg II: 2-3-4-7. Solenidion  $\omega = 4,5 \mu\text{m}$  long, similar in shape to its homolog solenidion on leg I, is inserted in the tarsus base. Spin  $pl''$   $4 \mu\text{m}$  long is placed distally in relation to solenidion  $\omega$ . Femur II and tibia II provided with characteristic processes. Formula of setae on particular segments of leg III: 0+3-4-4. Leg IV very short ( $9,5-10 \mu\text{m}$  long) shorter than tibiotarsus of leg I. Leg IV consist of only two well defined movable segments. Limit between femorogenu and tibiotarsus is very difficult to distinguish. Setae  $tc'' = 23-24 \mu\text{m}$  long characteristically blow up in its proximal part. Setae  $v'Ti = 8-9,5 \mu\text{m}$  long, stiff. Setae  $v'F = 4,5-6 \mu\text{m}$  long, fine, sharply ended. Setae  $v'G$  completely reduced.

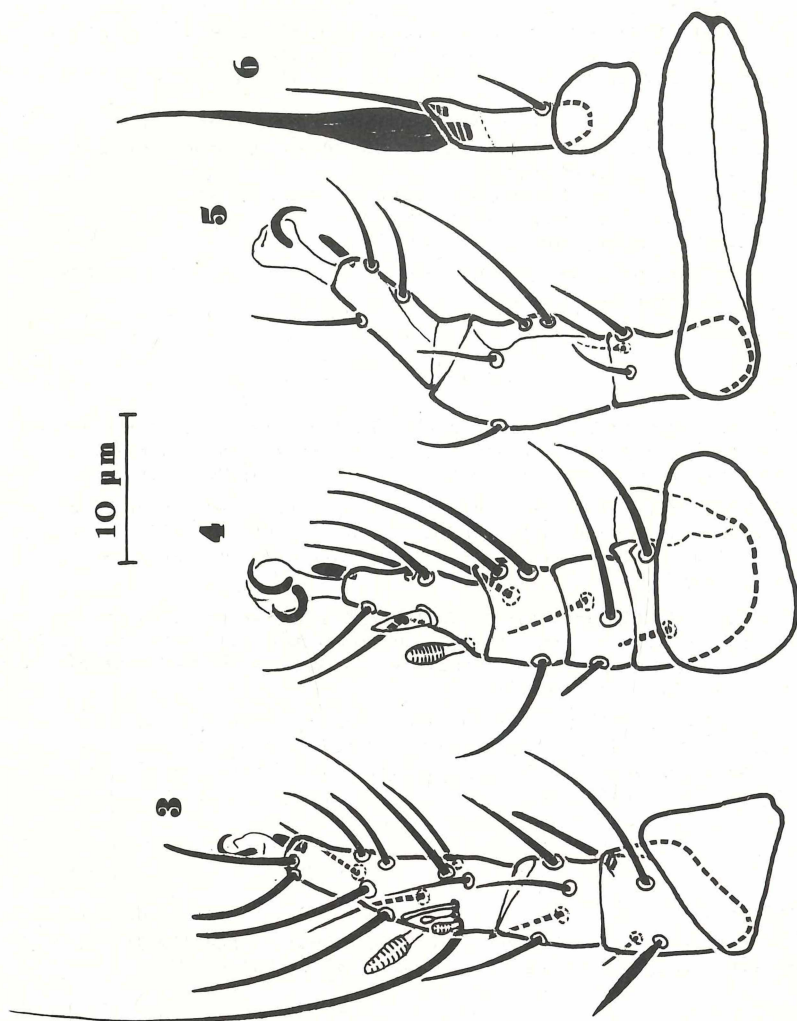
Male and larva: unknown

Types. Holotype (♀) and paratypes (8 ♀♀) were found in nest of *Formica rufa* (s.l.) of pine forest, Głębokie near Międzyrzecz, Poland, 15.08.1972, leg. CZESŁAW BŁASZAK. Holotype in the Zoological Museum of University Hamburg, West Germany, 7 paratypes in Collections of Department of Animal Morphology, A. Mickiewicz University, Poland, 1 paratype in Canadian National Collection, Ottawa, Canada.

Remarks. *Neotarsonemoides adae* n. sp. shows many unusual evolutionary derived features which prove its distinction in comparison with other tarsonemid mites and which simultaneously are evidence that it is a very specialized species. Good example of it is reduction of setae on leg IV, shortened leg IV, reduced segmentation of leg IV. Probably these features are connected in some extent with parasitic way of life on ants.

From the Tarsonemidae this species most resembles *Tarsonemus lucifer* (SCHAARSCHMIDT 1959, KALISZEWSKI 1983). Similarities between these species is shown among others in following features:

1. Gnathosoma hidden under rostral shield
2. Structures of chelicerae, palpa and pharynx
3. Shape of gnathosoma
4. Relatively long distance between stigmata
5. Sensillus ( $sc_2$ ) without distinct limit between head and pedicel
6. Structures and shape of setae on dorsal side
7. Presence of characteristic integument attached to the anterior edge of propodosomal plate (usefull during hiding of gnathosoma)
8. Edge of propodosomal plate between ends of apodemes I and II is not broken



Figs. 3-6: *Neotarsonemoides adae* n. sp., n. gen., female. - 3: leg I; 4: leg II; 5: leg III; 6: leg IV.

9. Striae extending from ends of apodemes I in posterior direction
10. Shape of apodemes II
11. Strong transverse apodeme
12. Setae 2a on the ends of apodemes II
13. Apodemes III strong with characteristic thickenings, extending in medial and lateral direction in relation to trochanteres III, sometimes joined
14. Setae tc' and setae tc'' in the middle part of tibiotalar-sus I
15. Solenidion  $\omega$  in proximal part of tibiotalar-sus I
16. Presence of sharp processes on femur I, and similarity in structures of setae
17. Setae pl'' in the middle part of tarsus II
18. Presence of processes on tibia II
19. Presence flaky processes on femur II

Nomenclature used in this paper is based on LINDQUIST (in press) and KALISZEWSKI (1984).

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