Halina OPŁOTNA * and Aleksander RAJSKI **

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Oppiella rafalskii sp. n. (Acarida, Oribatida)***

[With 8 text-figs.]

Oppiella rafalskii sp. n. (Acarida, Oribatida)

Abstract. The authors describe from Poland a new species of genus Oppiella Jacot, very similar to Oppia serratirostris Golasova. Besides detailed morphologic description, the study contains the analysis of its systematic position and remarks on ecology and zoogeography.

Oppiella rafalskii sp. n.

Oppia sp. 7: Rajski, 1961.

Type material. Holotype (specimen No. VI), Puszczykowo near Poznań, 3. V. 1955., *Dicrano-Pinetum* (120 years old pine forest), Rajski collector. Paratypes: as holotype (specimens I—V+XVI). Type material is in the collection of Rajski, University Teachers College, 70—451 Szczecin, Poland, Wielkopolska str. 15.

Other material:

1. 36 specimens as holotype and 24. V. 1955 — 25 specimens.

Sypniewo near Poznań, Arrhenatheretum elatioris (sweet meadow), 21. IV. 1955 — 21 specimens, 3. V. 1955 — 120 specimens, 2. IX. 1955 — 19 specimens, 14. VI. 1956 — 20 specimens, 4. VII. 1956 — 17 specimens.

3. Promno near Poznań, Querceto-Carpinetum medioeuropaeum (broad leaved mixed forest), 18. IV. 1955 — 1 specimen, 18. VIII. 1955 — 10 specimens,

9. IX. 1956 — 10 specimens.

4. Dziewicza Góra near Poznań, Querceto-Carpinetum medioeuropaeum, 25. IV. 1955 — 4 specimens, 20. VIII. 1955 — 1 specimen, 2. IX. 1955 — 3 specimens, 30. V. 1956 — 79 specimens, 30. V. 1956 — 24 specimens. Station 1 — 4 RAJSKI collected.

^{*} Author of the drawings.

^{***} Author of the text.

*** The study has been executed in the program MR II/4.

5. Piaski Małe near Stepnica (Szczecin palatinate), farm courtyard, 2. III. 1978 — 1 specimen, Opłotna collector.

Name derivation. This species is named in honour of Professor Jan RAFALSKI, on his 70th birthday.

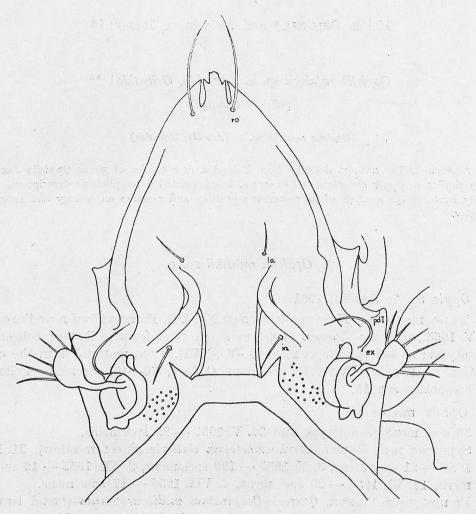


Fig. 1. Oppiella rafalskii sp. n. Prodorsum (holotype). Magnification 750×

Description

Body length 226—245 µm, maximum width (closely behind genital aperture) 107—123 µm (Table I). Colour typical for *Oppidae* family, golden of pale hue. Only in places where some elements overlap or in ridges of integument—darker. Clots of opalescent cerotegument of a diameter slightly exceeding this of seta base, irregularly and scarcely scattered over the whole body, both on the ventral and on the dorsal sides.

Basic dimensions (µm) of Oppiella rafalskii sp. n.

		į g	- The state of the
	nce	gen-an	46.2 45.2 44.9 44.9 54.3 47.1
	Distance	mt-gen	67.3 63.6 63.1 62.2 62.2 63.7
	Lyrifs.	iad	7.7 9.9 8.7 7.8 8.8
	Anal aperture	width	38 38 48 38 48 48 48 48 48 48 48 48 48 48 48 48 48
	Anal a	length	39 39 39 39 39 39 39 39 39 39 39 39 39 3
1	Genital aperture	length width length width length width length width	24.5 21.7 24.9 22.0 28.0 24.2
•	Gen	length	23.1 19.8 22.6 19.8 24.2 21.9
1	Gnathosoma	width	8 5.7 5.8 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
	Gnath	length	67.1 62.3 61.5 63.2 67.1
	gaster	width	117.1 110.0 113.2 108.9 118.5 113.5
	Notogaster	length	158-1 157-3 159-0 152-2 146-0 154-5
	rsum	width	80.3 75.5 77.2 73.5 76.1
	Prodorsum	length	75.8 74.2 * * 4 * 5 * 6 * 8 * 8 * 8 * 8 * 8 * 8 * 8 * 8 * 8
	Total	width	123.7 106.9 113.2 108.7 119.9 114.5
	To	length width	245.2 235.7 * 226.4 226.4 238.2 283
	Specimen		I III IIII V V IIV IIV IIV IIV IIV IIV

* with expanded chelicerae.

Prodorsum (Fig. 1 and 2). Length 73—93 ν m. With (measured at pedotectum I level, fig. 1: pdI) 73—80 μ m (Table I). Rostrum width two incisions not reaching the base of seta ro, trifurcate. Median lobus shorter than lateral ones, what may be seen on squashed animal (Fig. 2B); at specimens viewed in toto it seems to be longer (fig. 1).

Median lobus also trifurcate, with two distinct teeth on sides. Median part longer than these teeth (Fig. 1 and 2B), also trifurcate. External edges of

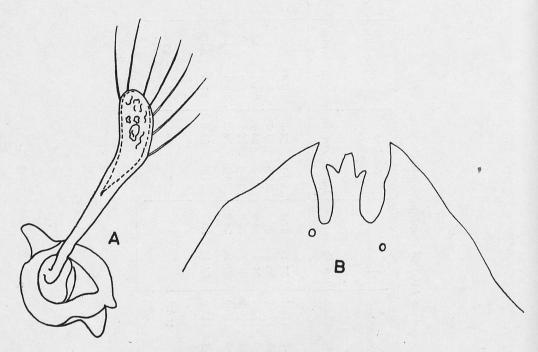


Fig. 2. Oppiella rafalskii sp. n. (specimen nr XVI). A — bothridium with sensillus, B — rost rum. Magnification $1200 \times$

prodorsum on the sector frem rostrum to I leg smooth and slightly convex. Before the insertion of the I leg a distinct, sharpened projection. Pedotectum I (pdI) indistinctly sharpened, anteriorly directed. Prodorsum widest at pdI level. Prodorsum narrowing posteriorly from insertion of the II leg towards sejugal groove.

On proximal part of prodorsum chitinous ridges present, forming characteristic figure (Fig. 1). Anterior margin of notogaster straight. From anterolateral angles of notogaster two short (4—6 μ m at II specimen) triangular projections extend divergently. In middle part of prodorsum at level of pdI and of insertion of I pair of legs, distinct arched ridges present, with convexity directed towards the plane of symmetry of the animal. They are thickest in the middle part of the arch and get thinner and gradually vanish at both ends. It may be seen from lateral view that their proximal ends extend till both ridium.

Table II

14.3 9.1 p_3 17.4 111.2 10.4 9.6 12.1 p_2 111.7 10.9 9.9 111.7 11.0 p_1 Oppiella rafalskii sp. n. — length of the dorsal setae (in µm) 18.1 14.3 10.7 73 14.3 12·2 13·2 13.2 7.2 8.7 9.3 7 14.3 11.2 ms 10.9 12.0 14.3 ti. 12.3 14·3 15·1 14.9 te 14.3 10.5 12.4 ta 14.3 ex 3.3 3.4 3.9 la 19.5 18.5 17.5 15.8 21.1 18.4 ro 36 Oppia serraseta GOLOSOVA specimen tirostris mean

Table III

Oppiella rafalskii sp. n. — distances of the bases (insertions) of dorsal setae (in µm)

distance											34 -			
(mrl)												 		
	10-10	la-la	xə-xə	in-in	ta-ta	te-te	ti-ti	ms-ms	11-11	T2-T2	T3-T3	p_1 - p_1	p_z - p_z	$p_3 - p_3$
specimen											- 1			
												y		
Ι	9.5	20.4	67.3	29.9	9.09	85.7	51.7	64.8	26.0	54.2	75.2	14.3	63.8	83.9
п	10.0	19.2		23.7	8.19	71.3	46.6	65.8	23.8	20.0	79.7	18.2	69.2	90.4
Ш	12.5	16.7		8.97				9.89	22.0	50.3	71.4	16.7	66.4	
M	10.2	19.4	65.6	24.5	47.5	79.2	47.9	57.1	21.4	47.9	71.4	16.0	9.29	83.8
mean	10.5	18.9	66.4	26.2	20.0	78.7	48.7	9.19	23.3	9.09	74.4	16.3	2.99	0.98

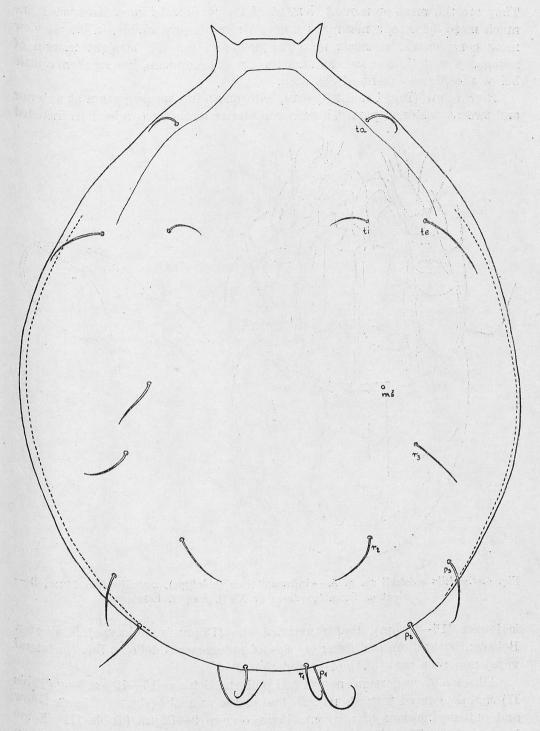


Fig. 3. Oppiella rafalskii sp. n. Notogaster (holotype). Magnification 750×

They are the most prominent element of the prodorsal figure. An arched line much more delicate, semetimes (in dorsal view) hardly visible, in lateral view more conspicuous, connects marginal points of anterior straight margin of notogaster with thicker arches in middle part of prodorsum, joining them a little below the highest point of the arch.

Bothridium (Fig. 1 and 2A) oval, with one bifurcate projection at anterior and two at posterior part. The anteroposterior diameter (projections included

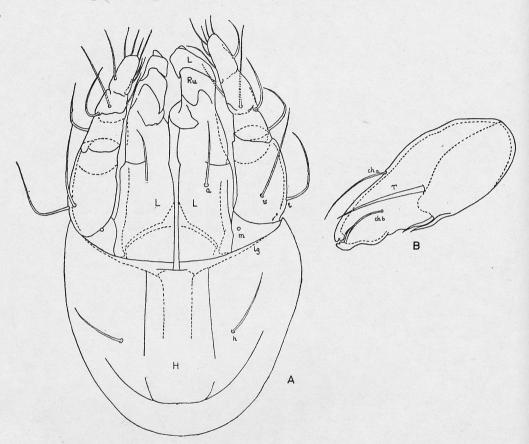


Fig. 4. Oppiella rafalskii sp. n. A — infracapitulum (holotype), magnification $750\times$, B — right chelicera (specimen nr XVI), magnif. $1200\times$

is longer (15—25 μ m), the transversal one (13 μ m in holotype) is shorter. Between both ridium and anterior edge of notogaster a delicate line (in lateral view) and area with distinct granulation.

All setae of prodorsum smooth and piliform. Setae ro 15—19 μ m long (Table II) slightly curved towards median line of the animal body, with bases below and outside incisions of rostrum, distance ro-ro 9—12 μ m (Table III). Setae la very short. Their bases closer to the median line of the animal body than distal ends of prodorsal arches, distance la-la—16—20 μ m (Table III). Likewise

Table IV

Oppiella rafalskii sp. n. — length of the ventral setae (in µm)

seta																
	ų	Ia	1b	Ic	2a	20	3a	38	30	40	46	40	ag	ads	ad_2	ad_1
specimen																
-	ó	6.7	6.7	8.9	5.1	9.4	3.7	6.5	9.4	5.1	6.5	7.2	8.1	6.1	7.7	8.1
<u>'</u>						7.7	2.6				3.0					6.7
							2.7				5.4					9.4
\	8.7	4.4	5.9		4.2		4.5		9.1					7.7	4.8	8.8
VI				8.1					6.1							4.8
mean	8.7	5.5	6.3	7.4	4.6	8.5	3.4		8.2)	4.8			6.9	6.2	8.4
		the second									_					

short are setae in situated in the triangle of prodorsum ridges near their lateral angles, distance in-in 24—29 µm. Bases of setae ex lie anteriorly and laterally in relation to both ridium. Setae ex strongly bow-like curved, with convexity direction outward. They are longer than the long diameter of both ridium (Fig. 1). Sensillus (Fig. 1 and 2A) 21—28 µm long (setulae excluded), ended by a flat, triangle resembling head. Its top joins the stem and slightly convex base forms the distal end. At the top of the head, in almost regular distances, 6—7 setulae (the median ones about 12 µm) longer than the maximum width of the head. Sensillus anteriolaterally directed.

Notegaster (Fig. 3) oval, elongate, 146-159 m long, 109-118 µm wide (Table I). Anterior margin straight with two triangular projections (4-6 µm long). Notegaster with 10 pairs of delicate, smooth and thin setae. Setae r_1 and p_1 hook-like bent. Setae ms and r_2 distinctly bent towards plane of symmetry of the animal. Others slightly arched and thus probably longer than data given in Table II. Distances between bases of paired setae (Table III) as follows: $(p_3-p_3>te-te \geqslant r_3-r_3>p_2-p_2>ms-ms>r_2-r_2\geqslant ta-ta\geqslant ti-ti>r_1-r_1>p_1-p_1$. Some specimens (holotype) show slight differences in these data (Table III) this being due to the margin of error in measurement.

Infracapitulum (Fig. 4) of diarthric type. Labiogenal suture (lg) arched, proximally bent. Infrabuccal fissure present. Lips (L) relatively long. Seta h (about 9 μ m) on submentum (H) present. Setae outside the palpal bases absent. Basis of seta a on the lip (L) at about 1/3 of the lip length. Rutellum (Ru) ends curved towards sagittal plane. Palpus of quintuple segments. Palpal setation 1—2—1—3—7. On palp tarsus four terminal (acanthoids?) setae, one long antiaxial, protruding obviously beyond terminal ones and two paraaxial setae approximately at middle length of tarsus present. Solenidium non differentiated. All setae situated separately. Length of infracapitulum 51—57 μ m, width 34—37 μ m. Distance h-h about 16 m. Length of lips (L) about 25 μ m (specimen V), length of submentum (H) about 24 μ m (specimen V). Chelicerae (Fig. 4B) elongate, oval, weakly sclerotized. Both digits with two rounded teeth. Träghård's organ (T) lenger than setae cha and chb. Only seta cha protrudes beyond ends of digit. Two spines medially at base of movable digit.

Coxisternal region (Fig. 5, Tables I, III, IV). Length (mt-gen) 62—67 μ m. Epimeral setation 3—3—3. In case of setae 2b only insertions visible. All setae are thin, delicate, piliform. Max mum length 10 μ m (2c, 3c). Most, though, are shorter. Distances between insertions of paired setae (Table V) on ventral side decrease as follows: 4c-4c > 1c-1c > 2c-2c > ad_3 - ad_3 > 3c-3c = 4b-4b > ad_2 - ad_2 > 3b-3b> 1b-1b> 4a-4a> ag-ag> 3a-3a> 2a-2a> b-b> ad_1 - ad_1 > 1a-1a.

Pedotectum I (pdl) slightly sharpened, anteriorly directed. Angle of discidium (di) a little more than 90°. Not very prominent. Sternum visible on its whole length, or invisible on the sector apo_1 - apo_{sj} (specimen V). Apo_{sj} the strongest. Apo_1 and apo_4 visible. Apo_3 absent. Sternum with two more or less visible trapezial swellings at level of apo_1 and apo_{sj} .

Oppiella rafalskii sp. n. — distance of the bases of the ventral setae (in µm)

1							
	ad_1 - ad_1	14.3	16.5	9.3	14.3	13.1	13.5
	ad_2 - ad_2	2.69	49.6	47.5	46.0	51.0	8.09
	ads-ads ads-ads adr-adr	0.4.0	65.4	6.29	57.1	65.3	61.5
	ag-ag	31.2	31.6	6.97	26.5	32.3	29.7
	40-40	2.98				81.5	84.1
	46-46	62.6	63.4		55.2	8.09	60.5
	40-40	 33.4	33.7		31.4		32.8
	30-30	64.3			57.1	58.8	1.09
	36-36	48.9	44.2	43.1	42.8	45.5	6-77
	3a-3a	23.5	20.1	22.1	19.7	18.5	20.8
	2a-2a	17.8	17.5	18.5	17.2	14.6	17.1
1	10-10	82.1					
LL	16-16	40.2	43.0	38.8	36.9	38.3	39.4
1	la-la	10.8	9.01	9.01	10.7	10.7	10.7
	h-h	16.0	16.9	14.4	16.1	18.1	16.3
	distance	I	П	III	Δ	IA	mean

Anogenital region (Fig. 6). Genital aperture slightly wider than long (Table I). Each plate with 4 genital setae: gen_1 — anterior directed, gen_2 — anterior obliquely, gen_3 and gen_3 — laterally or posteriorly. Distance gen-an about 47 μ m, rather constant (Table I). Anal aperture slightly longer than wide.

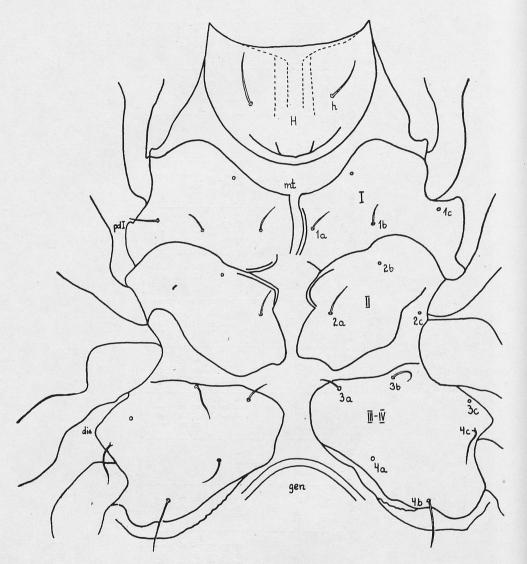


Fig. 5. Oppiella rafalskii sp. n. Coxisternal region (holotype). Magnification $750 \times$

Each plate with two setae, in natural position posterior directed. Distance an_1 - $an_1 \ge an_2$ - $an_2 \approx 15$ μ m. Setae ag and ad of similar length (6—8 μ m), thin, piliform, ad_3 - $ad_3 > ad_2$ - $ad_2 > ag$ - $ag > ad_1$ - ad_1 . Lyrifissure iad is parallel with long side of anal aperture and about 8 μ m long (Table I) likewise setae g_2 and an_1 .

Legs (Fig. 7—8, Tables VII—VIII), IV > I > III > III. Chaetom as Table VI.

Leg I (Fig. 7 A and 7 B). Solenidium φ_1 and δ remarkably long. Solenidium

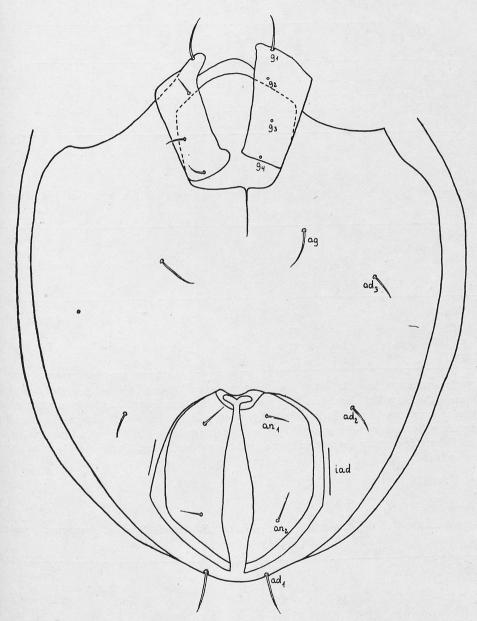


Fig. 6. Oppiella rafalskii sp. n. Anogenital region (holotype). Magnification $750\times$

 φ_2 baculiform whereas δ and φ_1 tactile. All solenidia without accompanying setae. Setae: pl, a, s on tarsus and seta v on tibia barbed. Others smooth. Famulus (e) short and with club-shaped end.

Table VI Chaetotaxy of legs I—IV in Oppiella rafalskii sp. n.

Limb	Coxa	Tr	Fe		Зe		Гі		Ta	
Leg	t	t	t	t	(s)	t	(s)	t	(s)	(e)
I	_		6	3	(1)	6 5	(2) (1)	20 14	(2)	(1)
III	2 1		3 2	2	(I) —	3 4	(1)	12	— —	=

 $\label{eq:table VII} \begin{tabular}{ll} \textbf{Dimensions of legs $Oppiella rafalskii}$ sp. n. holotype (specimen VI) in μm. Measured in ventral aspect * \\ \end{tabular}$

Limb							
	Co	Tr	Fe	Ge	Ti	Та	total length
leg							
ı			45.2	11.0	28.3	44.7	130.4
II			37.3	9.0	22.0	34.4	96.7
ΪΪΙ	18-1	5.9	22.9	8.2	22.3	37.3	110.3
IV	22.0	12.4	28.3	11.0	30.3	44.1	141.5

^{*} Measurements have been done on animals in toto, some legs being slightly bent. In such cases the length of chord has been measured. The total length of legs is not the sum of particular segments length. It is caused by mentioned bendings and occurrence of oblique border lines between some segments (e. g. coxa and trochanter of III pair). Trochanter and femur IV are frequently separated by an indistinct border line. Tarsus has been measured claws included.

Table VIII

Arithmetic means of the dimensions of legs in *Oppiella rafalskii* sp. n. paratypes (specimen I—V) and holotype (specimen VI) in μ m

Limb	Co	Tr	Fe	Ge	Ti	Ta	total length
I			46.3	9.2	27.0	43.9	124.9
II			37.8	8.8	20.1	34.6	103.7
III	17.3	6.4	21.0	7.2	21.0	36.7	106.3
IV	21.6	12.4	28.3	10.8	28.2	44.1	137.1

Leg II (Fig. 8 A). Solenidia ω baculiform, while φ and δ tactile, δ longer than others (over 55 μ m — holotype). All solenidia without accompanying setae. Setae s, a (tarsus) and v (tibia) coarsely barbed. Others smooth.

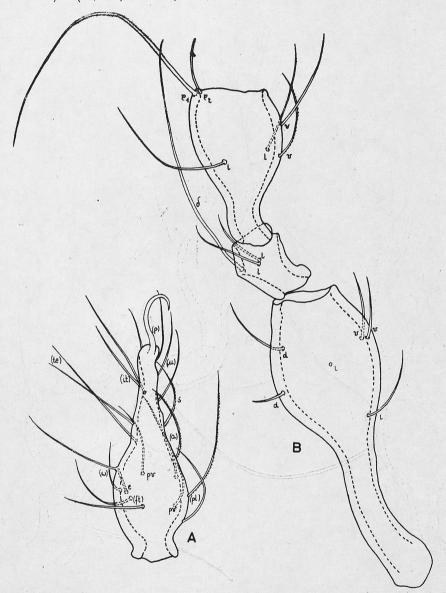


Fig. 7. Oppiella rafalskii sp. n. Leg I (specimen nr XVI), A — tarsus, B — femur, genu and tibia. Magnification 1200×

Leg III (Fig. 8 B). On tibia one solenidium tactile. All setae smooth. Antilateral setae (a) distinctly thicker than others. Fastigial seta (ft) unpaired. Leg IV (Fig. 8 C). Seta pv barbed, others smooth. Solenidium φ tactile very long and curved, extending beyond end of tarsus. Setae ft, pv unpaired.

Taxonomic position. Oppiella rafalskii sp. n. is most similar to Oppia serratirostris Golosova, 1970. Differences are small but constant and of high taxonomic importance.

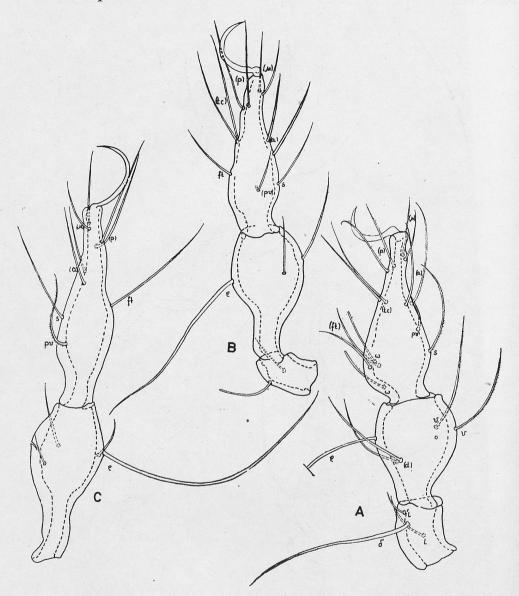


Fig. 8. Oppiella rafalskii sp. n. Femur, genu and tibia (specimen nr XVI) of leg II (A) leg III (B) and leg IV (C). Magnification $1200 \times$

1. At the species described the bases of lamellar setae (la) situated between distal ends of prodorsum ridges (Fig. 1) while at *serratirostris* on their external sides. 2. Arches, connecting bowed ridges of prodorsum with anterior margin of notogaster are, in dorsal view, but feebly marked stripes (Fig. 1), while at

serratirostris they are thicker than mentioned bowed ridges of prodorsum. 3. Bothridium at rafalskii is elongate and its longer axis is parallel with long axis of the animal. On its posterior margin two projections present, on anterior — a one, bifurcate. At serratirostris bothridium is rounded with a single tooth posteriorly. 4. On the head of sensillus maximum 7 setae have been observed,

Table IX

Occurrence of Oppiella rafalskii sp. n. in six habitats in the environs of Poznań

Habitat	C	D	Σ	мн	мо	pH
Sphagnum		-		_	_	_
Alnetum glutinosae typicum		_	_	64.9	47.3	6.3
Molinietum coeruleae		_	_	45.6	19.4	6.8
Arrhenatheretum elatioris	31	2.6	197	30.8	10.2	7.1
Querceto-Carpinetum medioeuropeum	47	0.8	132	17.5	4.7	5.6
Dicrano-Pinetum	11	0.4	67	11.6	4.6	5.6

MH — mean humidity as percentage of fresh soil weight

MO — mean contents of organic matter as percentage of soil dry mass

Σ — number of specimens captured

Table X
Relative constancy of occurrence of Oppiella rafalskii sp. n. in different ranges of some abiotic factors of the habitat

factor	oligo	meso	poly	group
humidity organic matter pH	100 100	100 — 50	— —	mst oligo oeu

Humidity mesotyp (ms) means occurrence by mean humidity 11—35% and maximum ranges 5.6—54%.

Organic matter oligotyp (oligo) means occurrence by 0—35% ignition loss of dry weight, pH oligotyp (oligo) means occurrence by pH \leq 6.5.

pH mesotyp (meso) means occurrence by pH 6.5-7.5.

while Golosova (1970) reports over 10 of them at serratirostris. 5. Area between both ridium and notogaster is slightly granulated while at serratirostris is smooth. 6. The anterior margin of notogaster of rafalskii has only one pair of projections, while at serratirostris there is one pair more outside. 7. Golosova (1970) marks seven pairs of notogastral setae on the drawing, while rafalskii counts them 10. 8. Both species differ obviously by general size and proportions of genital plates (Table I). 9. Probably there are still more differences, but because of

a very short description of serratirostris it was impossible to make further comparisons.

Golosova (1970) classified species described by herself in genus *Oppia* C. L. Koch, 1836. In the same way it was classified in the recently published key (Giljarov and Krivoluckij, 1975). Taking into account Seniczak's revision (1975) the species described now by us should belong to the genus *Oppiella* Jacot, 1937 having 10 pairs of notogastral setae. Since it is very close to *O. serratirostris*, probably also the species of Golosova ought to be classified in the genus *Oppiella*, this, however, being subject to a more thorough recognition of its morphology.

Areas of the two species concerned are greatly disjunctive. O. serratirostris has been described from Far East, while rafalskii from Western Poland. As it is known to the authors, the species of Golosova has not yet been rediscovered. One may not exclude that the two forms had come into existence in connection with glacial epoch, when the continuous palearctic area of aboriginal species had been broked and divided into West-European and Asiatic parts.

Ecology (Table IX and X). O. rafalskii sp. n. occurs in the regions of Poznań at mean values of soil humidity (for details see Rajski, 1961) and belongs undoubtedly to mesostenohygric species (Table X). Table IX suggests that other factors being constant, the fresh broad forests create better conditions for development of investigated species than other examined biotopes. Although on meadow (Arrhenatheretum) relatively more animals were collected, but in broad leaved forest (Querceto-Carpinetum) constancy (C) reaches higher values, what indicates more regular distribution. Pine forest (Dicrano-Pinetum) is probably, at least temporarily, too dry for this species. In the site deprived of undergrow not any specimen has been found.

It avoids organic soils (Table IX: Alnetum and Molinetum). It has been found only at low contents of organic matter in soil (Table X) and in this respect it belongs to oligo type. As regards soil acidity, only neutral and acid biotopes have been investigated. In the latter (ph < 6,5) it occurs twice as frequently as in neutral one and according to nomenclature applied (RAJSKI, 1961) it constitutes in relation to pH an oligoeury type.

In soil section it occurs usually in superficial organic layers, mostly in one year old material, forming partly decomposed, but not yet homogeneous humus. It displays a rather contagious distribution, occurring in particular cores in agglomerations counting some dozen and even more than 100 animals, at not very high constancy (Table IX).

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REFERENCES

Golosova L. D. 1970. Novye vidy pancirnyh kleščej (Acariformes, Oribatei) iz južnoj časti Primorskogo Kraja i z Kurilskich Ostrovov. Zool. Ž., Moskva, 49: 694—701.

GILJAROV M. S., KRIVOLUCKIJ D. A. (Eds.), 1975. Opredelitiel obitajuščih v počve kleščej Sacroptiformes. Nauka, Moskva, 491 pp.

Rajski A. 1961. Studium ekologiczno-faunistyczne nad mechowcami (Acari, Oribatei) w kilku zespołach roślinnych, I. Ekologia. Pr. Kom. biol. Pozn. TPN, Poznań, 25: 123—283.

Seniczak S. 1975. Revision of the family Oppidae Grandjean 1953 (Acarina, Oribatei). Acarologia, Abbeville, 17: 331—345.

STRESZCZENIE

Praca zawiera opis nowego gatunku roztocza Oppiella rafalskii sp. n. z terenu Polski. Jest on najbardziej zbliżony do Oppia serratirostris Golosova, 1970. Wymieniono 8 cech różniących oba gatunki. Ponadto dano charakterystykę ekologiczną O. rafalskii i uwagi zoogeograficzne.

Redaktor pracy: doc. dr A. Szeptycki

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