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Two new species of the genus *Prozercon* SELLNICK from Turkey (*Acari*: *Zerconidae*)

RAŞIT URHAN[1] and NUSRET AYYILDIZ[2]

[1]Department of Biology, Kazým Karabekir Education Faculty, Atatürk University, 25240 Erzurum-Turkey.

[2]Department of Biology, Faculty of Science and Letters, Atatürk University, 25240 Erzurum-Turkey

ABSTRACT. Two new species, *Prozercon* (*s.str.*) *artvinensis* and *P.*(*s. str.*) *demirsoyi*, are described from Turkey.

Key words: acarology, taxonomy, new species, *Acari*, *Zerconidae*, *Prozercon*, Turkey.

INTRODUCTION

The genus *Prozercon* was described in 1943 by SELLNICK, with the type-species *Zercon fimbriatus* C.L. KOCH,1839. Until now, 23 *Prozercon* species were known from the Holarctic Region (BALAN, 1992); of which 3 were previously recorded from Turkey (URHAN & AYYILDIZ, 1993, 1995). During the study of the zerconid material collected from Artvin province, two new *Prozercon* species were found. The specimens were collected by extraction in Berlese funnel.

The two species are described below. Morphological terminology follows that used by SELLNICK (1958) and BŁASZAK (1974). Type-materials are deposited at the Zoological Museum of Atatürk University.

LIST OF LOCALITIES:

08-04-75: Turkey, Artvin, Borçka, Muratlý town, 150 m, 27.10.1993. Sample from moss pads on the ground in a mixed forest.

08-07-14: Turkey, Artvin, about 2 km E Şavşat, 1260 m, 17.10.1992. Sample from moss pads on the ground in a mixed forest (mostly *Picea orientalis*).

08-07-34: Turkey, Artvin, Şavşat, Karaköy village, 1870 m,17.10.1992. Sample from moss pads on fig tree (*Ficus carica*) in a garden.

08-07-41: Turkey, Artvin, Şavşat, Karaköy village, 1900 m, 17.10.1992. Sample of litter and soil in a mixed forest (mostly *Abies nordmanniana* and *Picea orientalis*).

08-08-08: Turkey, Artvin, Yusufeli, Bahçeli village, 1350 m, 20.09.1992. Sample from moss pads on the ground in a mixed forest (mostly *Pinus sylvestris*).

08-08-57: Turkey, Artvin, Yusufeli, Çevreli village, 1450 m, 17.08.1993. Sample of litter and soil in a mixed forest (mostly *Pinus* sp. and *Quercus* sp.)

SYSTEMATICS

Family *ZERCONIDAE* CANESTRINI, 1891

Genus *Prozercon* SELLNICK, 1943

KEY TO THE KNOWN SPECIES OF THE GENUS *PROZERCON*

1(4). On the peritremal shield seta p1 plumose and downy
..... *Plumatozercon* BALAN, 1992.

2(3) Podonotal setae in *i*, *z* and *s* rows smooth except i_1 and i_2; seta S_1 smooth
..... *P. lutulentus* HALASKOVA, 1963

3(2). Podonotal setae in *i*, *z* and *s* rows plumose except i_5; seta S_1 plumose
..... *P. halaskovae* PETROVA, 1977

4(1). On the peritremal shield seta p1 smooth
..... *Prozercon* s. str.

5(6). Two marginal cavities are much larger than the mid cavity
..... *P. sellnicki* HALASKOVA, 1963

6(5). Size of all cavities the same.

7(18). All podonotal setae plumose except i_5.

8(13). Seta R_1 plumose.

9(10). Setae R_2-R_8 smooth
..... *P. kunsti* HALASKOVA, 1963

10(9). Setae R_2-R_8 plumose.

11(12). Distance between setae I_4-I_4 twice longer than I_3-I_3; pore Po_3 lies outside the line connecting s etae Z_3-Z_4 shifted toward seta Z_3; dorsal cavities distinct
..... *P. ornatus* (BERLESE, 1904)

12(11). Distance between setae I_4-I_4 almost equal or a little longer than I_3-I_3; pore Po_3 lies inside the line connecting setae Z_2-Z_3 shifted toward seta Z_3; dorsal cavities indisdinct
..... *P. escalai* MORAZA, 1988

13(8). Seta R_1 smooth.
14(15). Seta S_1 smooth
..... *P. tragardhisimilis* SOLOMON, 1984
15(14). Seta S_1 plumose.
16(17). Pore Po_2 lies outside the line connecting setae S_1-Z_2; seta Z_3 does not reach the margin of opisthonotum
..... *P. tragardhi* (HALBERT, 1923)
17(16). Pore Po_2 lies inside the line connecting setae Z_1-Z_2; seta Z_3 reaches the margin of opisthonotum
..... *P. satapliae* PETROVA, 1977
18(7). Most podonotal setae of *i*, *z* and *s* rows smooth.
19(32). Podonotal setae in *i*, *z* and *s* rows smooth except i_1.
20(25). Seta S_2 smooth.
21(22). Seta S_3 smooth
..... *P. kochi* SELLNICK, 1958
22(21). Seta S_3 plumose.
23(24). Setae I_1-I_2 and Z_1-Z_2 smooth
..... *P. ukrainicus* BALAN, 1991
24(23). Setae I_1-I_2 and Z_1-Z_2 plumose
..... *P. carsticus* HALASKOVA, 1963
25(20). Seta S_2 plumose.
26(29). Seta I_1 smooth.
27(28). Setae I_2 and Z_2 smooth
..... *P. aristatus* ATHIAS-HENRIOT, 1961
28(27). Setae I_2 and Z_2 plumose
..... *P. neorafalskii* BALAN & SERGIENKO, 1990
29(26). Seta I_1 plumose.
30(31). Setae r_2, R_1 and S_1 smooth
..... *P. juanensis* MORAZA, 1988
31(30). Setae r_2, R_1 and S_1 plumose
..... *P. usheri* BŁASZAK, 1985
32(19). In addition to seta i_1, one or more pairs of podonotal setae in *i*, *z* and *s* rows plumose.
33(34). Seta R_1 plumose
..... *P. dominiaki* BŁASZAK, 1979
34(33). Seta R_1 smooth.
35(40). Lateral ends of peritremal shield reach setae R_7 or R_8.
36(37). Seta i_2 smooth; seta I_5 does not extend to the margin of opisthonotum
..... *P. similis* BALAN, 1992
37(36). Seta i_2 plumose; seta I_5 extends beyond the margin of opisthonotum.
38(39). Setae i_6, z_1, s_4 and S_1 smooth
..... *P. carpathicus* BALAN & SERGIENKO, 1990

39(38). Setae i_6, z_1, s_4 and S_1 plumose
..... *P. demirsoyi* sp. n.
40(35). The lateral ends of peritremal shield reach seta R_4.
41(42). Seta S_1 smooth
..... *P. fimbriatus* (C. L. KOCH, 1839)
42(41). Seta S_1 plumose .
43(44). Seta s_5 smooth ; the base of seta S_1 is nearer to anterior edge of the opisthonotum than seta Z_1
..... *P. rafalskii* BŁASZAK, 1971
44(43). Seta s_5 plumose ; the base of seta Z_1 is nearer to anterior edge of the opisthonotum than seta S_1 .
45(46). Bases of setae I_3, I_4 and I_5 horizontally in the same direction
..... *P. tellecheai* MORAZA, 1988
46(45). Bases of setae I_3, I_4 and I_5 vertically in the same direction .
47(48). Seta r_2 smooth ; pore Po_2 lies on the line connecting setae S_1-Z_2
..... *P. micherdzinskii* BŁASZAK, 1978
48(47). Seta r_2 plumose ; pore Po_2 lies inside the line connecting setae Z_1-Z_2
..... *P. artvinensis* sp. n.

Prozercon (*s.str.*) *artvinensis* sp. n.

(Figs 1-5)

Female (Figs 1-2) Length of idiosoma (excluding gnathosoma) of holotype 370 µm , width 300 µm. Measurements of 75 paratypes; mean length 380 (370-394) µm, mean width 306 (292-312) µm.

Dorsal setae (Fig. 1): Podonotal setae i_2-i_6, z_1 and s_1-s_4 are smooth; the remainder plumose. Setae r_2, s_5 and z_2 pilose. On the opisthonotum all setae of *I*, *Z* and *S* rows plumose. Seta I_1 does not reach the base of seta I_2. Seta I_2 reaches the base of seta I_3. Distance between setae I_4-I_4 twice longer than I_3-I_3. Setae I_6 lie 78 µm away from one another. Seta Z_2 does not reach the base of seta Z_3. Distance between seta Z_5 and I_6 is 34 µm. Seta S_1 does not reach the base of seta Z_2. Setae S_2-S_4 similar to seta I_6 and extend by more than half length over the margin of the opisthonotum. All marginal setae of opisthonotum are short and thorn-like. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-24	Z_1-24	I_1-28
24	54	44
S_2-41	Z_2-24	I_2-34
48	31	34
S_3-41	Z_3-24	I_3-37
44	24	31

S_4-41	Z_4-20	I_4-37
	34	20
	Z_5-17	I_5-20
		17
		I_6-37

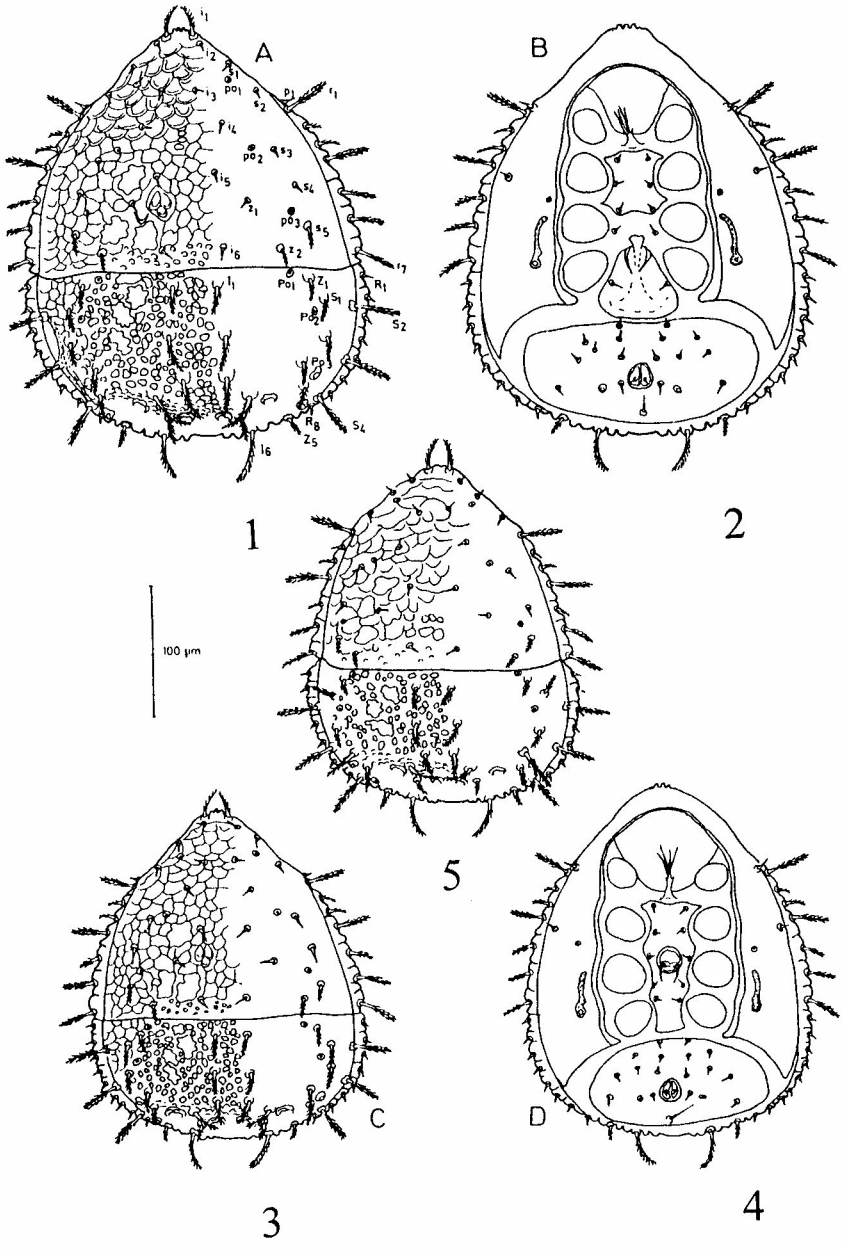
Pore po_1 located posterior to the insertion of seta s_1. Pore po_2 lies posterior to the line connecting setae i_4-s_3. Pore po_3 lies inside the line connecting setae s_4-s_5. Pore Po_1 located anteroparaxially to the insertion of seta Z_1. Pore Po_2 lies inside the line connecting setae Z_1-Z_2. Pore Po_3 lies outside the line connecting setae Z_3-Z_4. Pore Po_4 lies on the line connecting setae S_4-S_5. Ornamentation of the dorsal shields shown in Fig. 1.

The chaetotaxy and shape of the peritremal shield typical for the genus. The lateral ends of peritremal shield reach seta R_4. Adgenital shields and pores gv2 absent. Two setae are located on the anterior margin of the ventro-anal shield (Fig. 2).

Male (Figs 3-4). Idiosoma (excluding gnathosoma) in 39 specimens: mean length 310 (296-320) μm, mean width 242 (228-248) μm. Setae, pores and sculpture on the podo- and opisthonotum as in female. Distance between setae I_6-I_6 and Z_5-I_6 are 65 μm and 25 μm, respectively. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-21	Z_1-20	I_1-21
22	41	37
S_2-31	Z_2-20	I_2-26
36	24	31
S_3-33	Z_3-20	I_3-26
34	20	24
S_4-33	Z_4-17	I_4-28
	30	17
	Z_5-17	I_5-17
		20
		I_6-30

Deutonymph (Fig. 5). Idiosoma (excluding gnathosoma) in 6 paratypes; mean length 284 (255-313) μm, mean width 234 (221-245) μm. On the podonotum setae i_2-i_6, z_1, s_1-s_4 and r_2 short and smooth; the remainder plumose. Setae r_3 and r_5 are shorter and pilose. All marginal setae of the opisthonotum short and thorn-like. The remaining setae of the opisthonotum plumose. Seta I_2 does not reach the base of seta I_3. Setae I_6 lie 65 μm away from one another. Seta Z_3 extends beyond the margin of



1-5. *Prozercon (s. str.) artvinensis* sp.n.; 1, 2 - female: 1 - dorsal idiosoma, 2 - ventral idiosoma; 3, 4 - male: 3 - dorsal idiosoma, 4 - ventral idiosoma; 5 - deutonymph, dorsal idiosoma

the opisthonotum. Distance between seta Z_5 and I_6 is 22 m. Setae S_2-S_4 similar to seta I_6. The position of the pores on the podo- and opisthonotum is the same as in the adult stage. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-20	Z_1-16	I_1-16
20	43	31
S_2-36	Z_2-18	I_2-22
36	24	26
S_3-36	Z_3-36	I_3-24
30	16	19
S_4-36	Z_4-12	I_4-26
	19	16
	Z_5-14	I_5-14
		14
		I_6-32

MATERIAL EXAMINED

Holotype; female. No. 08-08-08: Turkey, Artvin, Yusufeli, Bahçeli village, 1350 m, 20.9.1992. Sample from moss pads on the ground in a mixed forest (mostly *Pinus sylvestris*). Paratypes 10 females, 7 males, 2 deutonymphs: same sample; other paratypes: 08-07-14: 17 females, 6 males; 08-08-57: 48 females, 26 males, 4 deutonymphs.

REMARKS

The new species is closely related to *Prozercon* (*s.str.*) *micherdzinskii* BŁASZAK, 1978, from which it can be easily distinguished by the following features:

Prozercon (*s.str.*) *artvinensis* sp. n.

1. Seta r_2 plumose.
2. Distance between setae I_4-I_4 twice longer than I_3-I_3.
3. Length of setae I_1-I_5 are different.
4. Pore Po_2 lies inside the line connecting setae Z_1-Z_2.
5. Dorsal cavities small and delicately lobed in front.
6. Middle part of opisthonotum covered with large and irregular cavities.

Prozercon (s.str.) micherdzinskii BŁASZAK, 1978

1. Seta r_2 smooth.
2. Distance between setae I_4-I_4 almost equal or somewhat exceeding I_3-I_3.
3. Length of setae I_1-I_5 almost equal.
4. Pore Po_2 lies on the line connecting setae S_1-Z_2.
5. Dorsal cavities big and smooth anteriorly.
6. Middle part of opisthonotum covered with regular spots.

ETYMOLOGY

The species is named after its locality which is Artvin (Turkey).

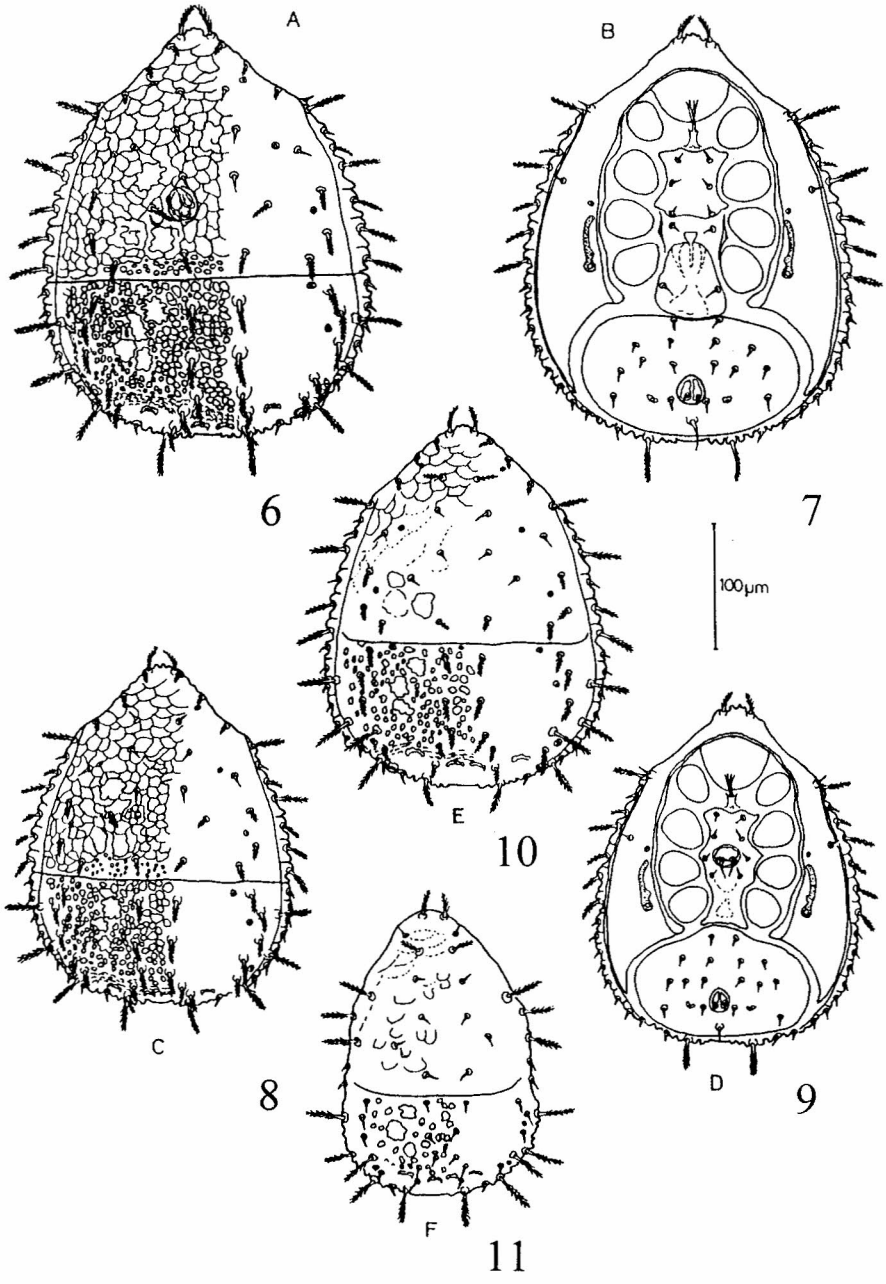
***Prozercon (s.str.) demirsoyi* sp. n.**

(Figs 6-11)

Female (Figs 6-7): Length of idiosoma (excluding gnathosoma) of holotype 360 µm, width 280 µm. Measurements of 33 paratypes; mean length 356 (347-360) µm, mean width 262 (242-279) µm.

Dorsal setae (Fig. 6): On the podonotum setae i_3-i_5, s_3 and r_2 are short and smooth; the remainder plumose. On the opisthonotum all setae of row *I* plumose. Seta I_1 does not reach the base of seta I_2. Setae I_6 long, 68 µm apart from each other. Setae Z_1-Z_4 similar to seta I_1 and seta Z_2 does not reach the base of seta Z_3. Seta Z_5 short and smooth. Distance between seta Z_5 and I_6 is 27 µm. Seta S_1 similar to seta I_1 and reaches the base of seta Z_2. Setae S_2-S_4 similar to seta I_6 and extends by more than half length over the margin of opisthonotum. All marginal setae of opisthonotum short and thorn-like. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-27	Z_1-24	I_1-27
17	48	44
S_2-34	Z_2-27	I_2-31
44	34	31
S_3-34	Z_3-27	I_3-31
41	17	17
S_4-34	Z_4-20	I_4-24
	27	17
	Z_5- 7	I_5-20
		10
		I_6-34



6-11. *Prozercon (s. str.) demirsoyi* sp.n.; 6, 7 - female: 6 - dorsal idiosoma, 7 - ventral idiosoma; 8, 9 - male: 8 - dorsal idiosoma, 9 - ventral idiosoma; 10 - deutonymph, dorsal idiosoma; 11 - protonymph, dorsal idiosoma

Pore po_1 lies on the line connecting setae s_1-i_4 nearer to s_1. Pore po_2 lies on the line connecting setae i_4-s_3 shifted toward seta s_3. Pore po_3 lies inside the line connecting setae s_4-s_5. Pore Po_1 is located anteroparaxially to the insertion of seta Z_1. Pore Po_2 lies inside the line connecting setae S_1-Z_2. Pore Po_3 lies on the line connecting setae Z_4-S_3. Pore Po_4 lies on the line connecting setae S_4-Z_5. Ornamentation of the dorsal shields shown in Fig. 6.

Chaetotaxy and shape of peritremal shield typical of the genus. Lateral ends of peritremal shield reach seta R_7. Adgenital shields and pores gv2 absent. Two setae are located on the anterior margin of the ventro-anal shield (Fig. 7).

Male (Figs 8-9): Idiosoma (excluding gnathosoma) in 16 specimens: mean length 290 (286-292) µm, mean width 215 (211-221) µm. Setae, pores and sculpturing pattern of the podo- and opisthonotum as in female. The distance between setae I_6-I_6 and Z_5-I_6 are 60 µm and 20 µm, respectively. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-19	Z_1-17	I_1-22
15	36	33
S_2-27	Z_2-19	I_2-22
35	22	22
S_3-27	Z_3-19	I_3-20
32	17	16
S_4-27	Z_4-15	I_4-17
	22	12
	Z_5- 4	I_5-15
		10
		I_6-23

Deutonymph (Fig. 10): Idiosoma (excluding gnathosoma) in 5 paratypes: mean length 282 (255-303) µm, mean width 217 (194-232) µm. Podonotal setae i_4, i_5, z_1, s_3, r_2, r_3 and r_5 short and smooth; the remainder plumose. Seta Z_5 and all marginal setae of the opisthonotum short and thorn-like. The remaining setae of opisthonotum plumose. Seta I_2 does not reach the base of seta I_3. Seta I_6 lie 60 µm away from one another. Seta Z_3 long and extends over the margin of opisthonotum. Distance between seta Z_5 and I_6 19 µm. Setae S_2-S_4 similar to seta I_6. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-17	Z_1-17	I_1-17
15	36	34
S_2-32	Z_2-17	I_2-19

34	23	23
S_3-32	Z_3-35	I_3-17
36	16	15
S_4-32	Z_4-12	I_4-10
	19	10
	Z_5- 4	I_5-10
		10
		I_6-24

Protonymph (Fig. 11): Length of idiosoma (excluding gnathosoma) in 2 paratypes: 227 (208-245) µm, width 164 (160-167) µm. Podonotal setae i_1, i_3, s_4, s_5 and r_3 long and plumose. The remaining setae of the podonotum short and smooth. Opisthonotal setae I_1-I_5, Z_1-Z_2, Z_4 and S_1 short and pilose. Seta Z_5 short and smooth. The remaining setae of the opisthonotum long and plumose. The distance between setae I_6-I_6 48 µm. Length of opisthonotal setae and distance between setae within longitudinal rows as follows:

S_1-10	Z_1-12	I_1-10
12	28	26
S_2-31	Z_2-14	I_2-12
29	16	19
S_3-31	Z_3-31	I_3-10
28	14	12
S_4-31	Z_4- 7	I_4- 8
	16	10
	Z_5- 4	I_5- 6
		10
		I_6-22

MATERIAL EXAMINED

Holotype; female. No. 08-07-34: Turkey, Artvin, Şavşat, Karaköy village, 1870 m, 17.10.1992. Sample from moss pads on a fig tree (*Ficus carica*) in a garden. Paratypes 17 females, 7 males, 5 deutonymphs, 2 protonymphs: from the same sample; other paratypes from: 08-04-75: 12 females, 7 males; 08-07-41: 4 females, 2 males.

REMARKS

The new species is closely related to *Prozercon (s.str.) carpathicus* BALAN & SERGIENKO, 1990, from which it can be easily distinguished by the following features:

Prozercon (s.str.) demirsoyi sp. n.

1. Seta r_2 smooth.
2. Setae i_6, z_1, s_1-s_2 and s_4 plumose.
3. Seta S_1 plumose.
4. Seta Z_5 smooth.
5. Pore Po_2 lies inside the line connecting setae Z_1-Z_2.
6. Middle part of opisthonotum covered with large cavities.
7. Seta I_6 twice longer than seta I_5.

Prozercon (s.str.) carpathicus BALAN & SERGIENKO, 1990

1. Seta r_2 plumose.
2. Setae i_6, z_1, s_1-s_2 and s_4 smooth.
3. Seta S_1 smooth.
4. Seta Z_5 plumose.
5. Pore Po_2 lies on the line connecting setae S_1-Z_2.
6. Middle part of opisthonotum covered with small spots.
7. Setae I_5 and I_6 similar in length.

ETYMOLOGY

We dedicate the new species to Prof. Dr. Ali DEMIRSOY, the Turkish entomologist (Hacettepe University), in gratitude for his contributions to the fauna of Turkey.

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REFERENCES

BALAN, P.G., SERGIENKO, M.I., 1990. Novye vidý kleščey-zerkonid (*Acari, Mesostigmata*) Ukrainskich Karpat. Novosti Faunistiki I Sistematiki, Kiev, Naukovo Dumka: 151-154.

BALAN, P.G., 1992. To the knowledge of the genus *Prozercon* (*Acari, Mesostigmata, Zerconidae*). Zool. Zhurn., **71** (6): 32-38.

BLASZAK, C., 1974. *Zerconidae* (*Acari, Mesostigmata*) Polski. In: Monografie Fauny Polski. **3**: 1-315.

-, 1978. Systematic studies on family *Zerconidae* III. Mongolian *Zerconidae* (*Acari, Mesostigmata*). Acta Zool. Acad. Sci. hung., **24** (3-4): 301-320.

SELLNICK, M., 1958. Die familie *Zerconidae* BERLESE. Acta Zool. Hung., **3**: 313-368.

URHAN, R., AYYILDIZ, N., 1993. Türkiye faunasý için yeni bir *Prozercon* SELLNICK, 1943 (*Acari, Mesostigmata, Zerconidae*) türü. Doga-Tr. J. of Zoology, **17** (1): 83-89.

-, 1995. Artvin ili zerkonidleri (*Acari, Mesostigmata, Zerconidae*) üzerine sistematik araþtýrmalar - I. Doga-Tr. J. of Zoology: in prees.