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Pardosa colchica Mcheidze, 1946: a first report from West Azerbaijan Province, Iran (Araneae: Lycosidae)

Shafaie, S.[1], Mirshamsi, O.[1,2], Aliabadian, M.[1,2], Moradmand, M.[3] & Marusik, Y.M.[4,5,6]

1 Department of Biology, Faculty of Sciences, Ferdowsi University of Mashhad, Mashhad, Iran
2 Research Department of Zoological Innovations (RDZI), Institute of Applied Zoology, Faculty of Sciences, Ferdowsi University of Mashhad, Mashhad, Iran
3 Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran
4 Institute for Biological Problems of the North, Portovaya Street 18, Magadan 685000, Russia
5 Department of Zoology & Entomology, University of the Free State, Bloemfontein 9300, South Africa
6 Zoological Museum, Biodiversity Unit, University of Turku, FI-20014 Turku, Finland

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A survey of species belonging to *Pardosa monticola* species group from Iran showed a new report. A detailed study reveals that the only female specimen from West Azerbaijan Province belongs to *P. colchica* Mcheidze, 1946. Characters for distinguishing *P. colchica* and morphologically similar *P. pontica* (Thorell, 1875) are given and illustrated. The two species differ in colour and spination.

Key words: Wolf spiders, Aranei, Pardosini, *monticola*-group, Middle East, West Azerbaijan

INTRODUCTION

The largest genus among Lycosidae is *Pardosa* C.L. Koch, 1847, which has 549 species distributed all over the world except Australia (Kronestedt & Marusik, 2011; World Spider Catalog, 2018). It has highest species diversity in the Palearctic, Nearctic and Africa (Shafaie et al. 2018, in press). Holarctic *Pardosa* species are subdivided into about 30 species groups (Dondale & Redner, 1990; Zyuzin, 1979). One of the largest groups is *Pardosa monticola*, with about 34 species (Ballarin et al. 2012; Marusik & Fritzén, 2009; Marusik et al. 2012; Shafaie et al. 2017). Although the group is well-defined by the shape of copulatory organs (Zyuzin, 1979), species discrimination is rather difficult or impossible in some cases (Ballarin et al. 2012; Marusik et al. 2012; Nadolny et al. 2016). Despite such problems, the *monticola*-group has been well-studied in Caucasus (Zyuzin & Logunov, 2000), Central Asia (Ballarin et al. 2012) and Iran (Marusik et al. 2012).

P. colchica is a member of *monticola*-group. It was first described by Mcheidze, 1946 according to a female from Georgia. Further studies reported it from Russia, Armenia and Azerbaijan (Otto, 2017). While studying *monticola*-group specimens from West Azerbaijan Province in Iran, we noticed a different single female. Comparative study of this female with previously confirmed *P. colchica* from Azerbaijan indicated that they belong to the same species. These specimens have some morphological differences with the type species judging from the description (Zyuzin & Logunov, 2000). Therefore, the discovery of this species in Iran impelled us to present a list of interspecific variations accompanied by new illustrations. Considering this paper, the number of *Pardosa* species in Iran increases to twenty-four (Shafaie et al. 2018, in press).

*Corresponding Author: mirshams@um.ac.ir

MATERIAL AND METHODS

Spider was examined and photographed at the Zoological Museum, University of Turku, Finland using an Olympus SZX16 stereomicroscope with an Olympus E–520 camera. The images were stacked by Zerene stacker software (http://zerenesystems.com/stacker/). Spination of legs I–IV is reported, but apical spines of the tibia and metatarsus are not considered because of the difficulty of defining their position across the segment. All measurements are given in millimetres (mm).

Taxonomy

Family Lycosidae Sundevall, 1833

Genus *Pardosa* C.L. Koch, 1847

Pardosa colchica

Figs 1–2, 5–6

Pardosa colchica: Mcheidze, 1946: 290, figs 6–7 (♀); Mcheidze, 1997: 238, figs 507–508 (♀).
Pardosa colchica: Zyuzin & Logunov, 2000: 310, figs 17–23 (♂♀).

Material examined. IRAN: West Azerbaijan Province: 1♀ Urmia City, Dizaj Takieh Village, 37°25'21"N 45°10'22"E, Elev.: 1300 m, 16.7.2016 (S. Shafaie). **AZERBAIJAN: Absheron Peninsula:** 1♂1♀ CE Azerbaijan, Baki, Ganly–Gyol Lake, 40°21.46'N 49°48.36'E, 20.5.2003 (Yu.M. Marusik).

Diagnosis. Females of *P. colchica* can be easily separated from *P. pontica* (Thorell, 1875) by presence of a longitudinal septal groove (vs. absent in *P. pontica*), septum with distinct protrusion posteriorly (septum without any protrusion in *P. pontica*) (Figs 5–6), presence of black spots under marginal stripes on carapace (vs. absent in *P. pontica*), yellow sternum with small grey radiated marks (black marginal marks in *P. pontica*) (Figs 2, 4) and different spination (Tables 2, 4).

Description. Female (from West Azerbaijan Province, Iran). Total length 10.3; carapace 4.7 long, 3.8 wide.
Prosoma. Carapace black. Median band yellow with rhombic field covered by white setae. Sub–marginal stripes yellow and two times wider than median band. Marginal stripes very thin and black. Black spots under marginal stripes. Endites, chelicerae and clypeus yellow. Labium black. Sternum yellow with small grey radiated marks (Figs 1–2).
Abdomen. Dorsum black with distinct yellow marks. Venter dirty yellow. Anterior spinnerets yellow, posterior spinnerets whitish yellow (Figs 1–2).
Legs. Coxae–metatarsi I–IV yellow with dark annulations. Tarsi of all legs yellow. Measurements and spination as in Tables 1–2.
Epigyne. Epigyne as in Fig. 5. Septum 3.6 long, 3.2 wide. Septum slightly longer than wide with a longitudinal septal groove. Septum with protrusion posteriorly. Anterior pockets relatively small, round and separated. Spermathecae as in Fig. 6.

Distribution. *Pardosa colchica* is known to be distributed from Guzeripl Village in Russia to West Azerbaijan Province of Iran (Otto, 2017). Some Records from Azerbaijan and Iran lie on the same longitude (47°E and 45°E respectively). Iran is southernmost locality of the species in the entire range (Fig. 8). Presence of this species is very probable in Turkey.

FIGURES 1–4. Female habitus: *P. colchica* from Dizaj Takieh Village (1–2), *P .pontica* from Newlu Village (3–4). Abbreviations: Lb lateral band; Mb median band; Ms marginal stripe; Ss sub–marginal stripe.

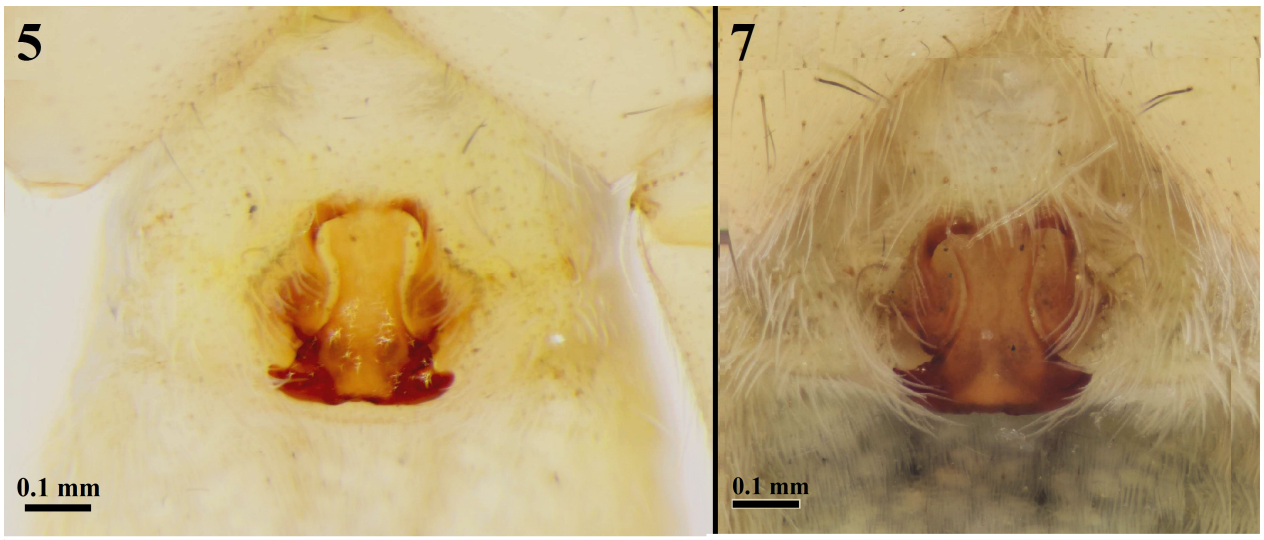
TABLE 1. Length of palp and legs in female (mm) of *Pardosa colchica* Mcheidze, 1946.

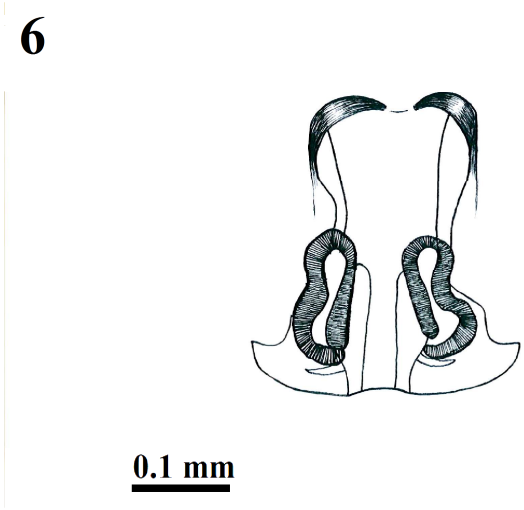
	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4	1.9	2.9	-	3.9	12.7
I	8	3.7	6.3	7.2	4.2	29.4
II	8	3.7	5.1	5.1	4.1	26
III	7.9	3.5	5.8	7.5	4	28.7
IV	10.7	4	8.9	11.6	5	40.2

TABLE 2. Female leg spination of *Pardosa colchica* Mcheidze, 1946.

	Femur	Patella	Tibia	Metatarsus
I	d†3, p‡2, r§2	d2, p1, r1	d2, p2, r1, v¶2–2	p2, r1, v2–2
II	d3, p2, r3	d2, p1, r1	d2, p2, r2, v2–2	p2, r2, v2–2
II I	d3, p2, r2	d2, p1, r1	d2, p2, r2, v2–2	p2, r2, v2–2
IV	d3, p2, r1	d2, p1, r1	d2, p2, r2, v2–2	p2, r2, v2–2

† dorsal; ‡ prolateral; § retrolateral; ¶ ventral.





FIGURES 5–7. Ventral view of genitalia. Epigyne and spermathecae of *P. colchica* from Dizaj Takieh Village (5–6) and epigyne of *P. pontica* from Newlu Village (7).

***Pardosa pontica* (Thorell, 1875)**
Figs 3–4, 7

Lycosa pontica Thorell, 1875a: 100 (♂♀); Thorell 1875b: 142 (♂♀).
Pardosa caraiensis Mcheidze, 1946: 288, figs 4–5 (♀); Mcheidze 1997: 239, figs 511–512 (♀).
Pardosops pontica: Roewer 1955: 197.
Pardosa pontica: Tongiorgi 1966: 351, figs 10–11, 24 (♂♀); Fuhn & Niculescu-Burlacu 1971: 118, fig. 53a–c (♂♀); Zyuzin 1979: 434, figs 17, 20 (♂♀; Zyuzin & Logunov 2000: 316, figs 40–42 (♂♀); Marusik *et al.* 2012: 117, figs 4–6, 12–13, 18–19, 23, 35, 41 (♂♀, in part, except specimens from Golestan Province).

Types. Lectotype ♂ and paralectotype ♀ (ZMUH), **Ukraine, Crimea:** Biyuk–Lambat [=Malyi–Mayak in Alushta], Alma River, designated by Tongiorgi 1964. No. 61.031, examined.

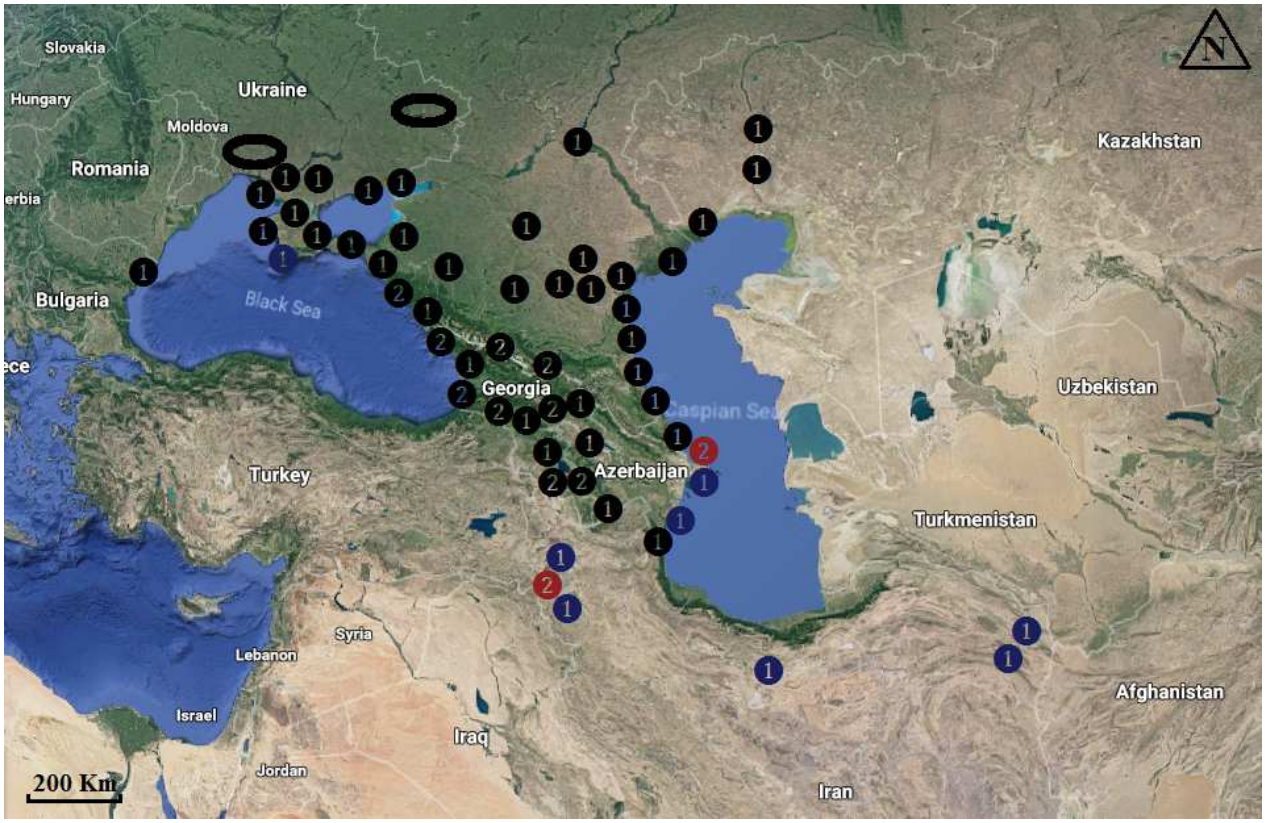


FIGURE 8. Sampling localities of *Pardosa pontica* (1) and *P. colchica* (2). Examined material (blue, red), recorded localities (black), province record without exact locality (black oval). One symbol may refer to several localities.

Material examined. IRAN: West Azerbaijan Province: 3♂ (ZMFUM), Newlu Village, 37°45'44"N 45°04'20"E, Elev.: 1280 m, 30.6.2016 (S. Shafaie); 6♀ (ZMFUM), Dizaj Takieh Village, 37°25'21"N 45°10'22"E, Elev.: 1300 m, 05.8.2016 (S. Shafaie); 2♀ (ZMFUM), Chubtarash Village, 37°17'55"N 45°06'02"E, Elev.: 1341 m, 06.8.2016 (S. Shafaie); 7♂ (ZMFUM), Takieh Ordushahi Village, 37°26'31"N 45°13'37"E, Elev.: 1332 m, 01.8.2016 (S. Shafaie). **AZERBAIJAN: Zuvand Area:** 1♂ (ZMUT), East of Divagatch Village, 38°41'05"N 48°23'E, 26.4.2003 (Yu.M. Marusik); **Absheron Peninsula:** 3♂, 4♀ (ZMUT), Bakı, Ganly–Gyol Lake, 40°21'46"N 48°48'36"E, 06.7.2003 (Yu.M. Marusik).

Diagnosis. See diagnosis for *P. colchica.*

Description. Female (from West Azerbaijan Province, Iran). Total length 11.3; carapace 5.4 long, 4.5 wide.

Prosoma. Carapace black. Median band yellow with rhombic field covered by white setae. Sub–marginal stripes yellow and two times wider than median band. Marginal stripes black. Black spots between marginal and sub–marginal stripes. Endites, chelicerae and clypeus yellow. Labium black. Sternum yellow with black marginal marks (Figs 3–4).

Abdomen. Dorsum black with indistinct marks. Venter grey. Spinnerets grey (Figs 3–4).

Legs. Coxae–metatarsi I–IV with dark annulations. Tarsi of all legs yellow. Measurements and spination as in Tables 3–4.

TABLE 3. Length of palp and legs in female (mm) of *Pardosa pontica* (Thorell, 1875).

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.1	2	3	–	3.9	13
Leg I	8.3	4	6.5	7.4	4.2	30.4
Leg II	6.5/8	2.5/3.9	5/5.7	6/5.5	3.9/4.2	23.9/27.3
Leg III	6.5/8	3/3.6	5/6	6.5/8	3.5/4.1	24.5/27.5
Leg IV	7.9/11	2.5/4	7/9	10/12.2	4.3/5.4	31.7/41.6

TABLE 4. Female leg spination of *Pardosa pontica* (Thorell, 1875).

	Femur	Patella	Tibia	Metatarsus
I	d†3, p‡(1), r§3(2)	p1, r1	p2, r2, v¶2–2	p2, r2, v2–2
II	d3, p2, r2	p1, r1	p2, r2, v2–2	p2, r2, v2–2
III	d3, p3, r2	d2, p1, r1	d2, p2, r2, v2–2	p2, r2, v2–2
IV	d3, p2(1), r2	d2, p1, r1	d2, p2, r2, v2–2	p2, r2, v2–2

† dorsal; ‡ prolateral; § retrolateral; ¶ ventral.

Epigyne. Epigyne as in Fig. 7. Septum 4.2 long, 3.3 wide. Septum slightly longer than wide and rounded posteriorly. Anterior pockets separated.

Distribution. *Pardosa pontica* is known to be distributed from Bulgaria to Razavi Khorasan Province of Iran. The record of this species from Razavi Khorasan Province is the southeasternmost in the entire range (Fig. 8).

DISCUSSION

Arachnologists subdivided *Pardosa* species into about 30 species groups (Dondale & Redner, 1990; Zyuzin, 1979). One of the largest species groups is *Pardosa monticola*, with about 34 species. Despite its Palearctic origin, the members distributed in the Holarctic (Ballarin et al. 2012; Marusik & Fritzén, 2009; Marusik et al. 2012). Although it is easy to identify the *monticola*-group species (Zyuzin, 1979), it is difficult or even impossible to separate species within the group (Ballarin et al. 2012; Marusik et al. 2012). The *monticola*-group has been well-studied in Caucasus (Zyuzin & Logunov, 2000), Central Asia (Ballarin et al. 2012) and Iran (Marusik et al. 2012; Shafaie et al. 2017). Currently, we got the opportunity to study specimens from Azerbaijan which were confirmed previously. This comparative study indicated that the single female specimen from Iran has been identified correctly. This is the first report on the occurrence of *P. colchica* in Iran. Considering this paper, the number of *Pardosa* species for the fauna of country has been raised to twenty-four (Shafaie et al. 2018, in press).

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