

Spiders (Arachnida: Aranei) of Azerbaijan.

1. New family and genus records

Пауки (Arachnida: Aranei) Азербайджана.

1. Новые для региона семейства и рода

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КЛЮЧЕВЫЕ СЛОВА: Aranei, пауки, Кавказ, Азербайджан, новые находки, новые виды.

ABSTRACT. Twenty genera and seven families (Desidae, Leptonetidae, Mysmenidae, Nesticidae, Palpimanidae, Prodidomidae and Theridiosomatidae) new to Azerbaijan are reported. 16 genera and 4 families are new to Caucasus. Five genera are new to the former Soviet Union (*Lycosoides*, *Mysmena*, *Orchestina*, *Trygetus* and *Tuberta*) and two genera (*Mysmena* and *Tuberta*) are new to Asia as a whole. Three species are described as new to science: *Lycosoides lehtineni* sp.n. (♀), *Paracedicus feti* sp.n. (♂♀) and *Trygetus jacksoni* sp.n. (♀) and 5 species are redescribed or/and illustrated: *Leptonetella caucasica* Dunin, 1990 ? (♀), *Howaia mogera* (Yaginuma, 1972) (♂♀), *Nesticella nepalensis* (Hubert, 1973) (♂ from India), *Orchestina* sp. (♀) and *Palpimanus sogdianus* Charitonov, 1946 ? (♂♀). The female possibly belonging to *L. caucasica* is described for the first time. Status of two subgenera of *Cedicus* Simon, 1875 is raised to generic level: *Paracedicus* Fet, 1993 stat.n., *Cedicoides* Charitonov, 1946 stat.n. *Howaia* Lehtinen & Saaristo, 1980 is removed from synonymy with *Nesticella* Lehtinen & Saaristo, 1980. New combinations were established for four species *Paracedicus ephthalitus* (Fet, 1993) comb.n., *Paracedicus gennadii* (Fet, 1993) comb.n., *Cedicoides parthus* (Fet, 1993) comb.n. and *Cedicoides maerens* (Simon, 1889) comb.n. ex *Cedicus*. *Cryphoea thaleri* Wunderlich, 1995 was reported from Kabardino-Balkaria for the first time for Caucasus and former USSR. It was found that *Howaia mogera* (Yaginuma, 1972) has a Caucaso-Pacific disjunctive range.

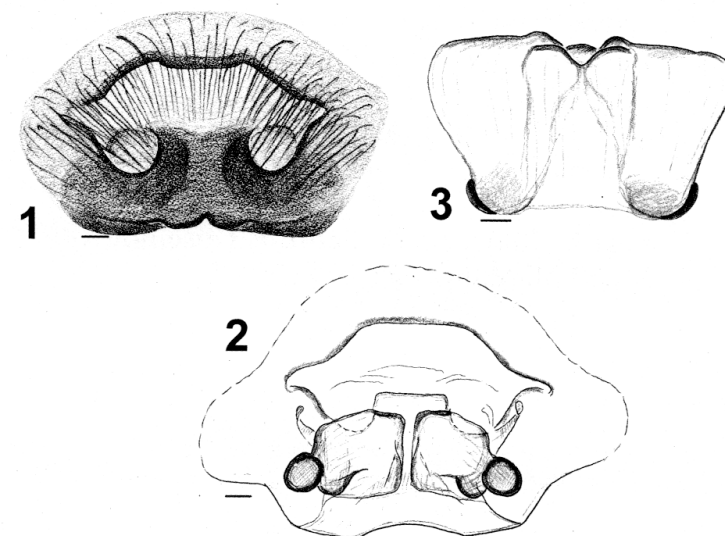
РЕЗЮМЕ. Двадцать родов и семь семейств (Desidae, Leptonetidae, Mysmenidae, Nesticidae, Palpimanidae, Prodidomidae и Theridiosomatidae) впервые отмечены в Азербайджане. Из них 16 родов и 4 семейства являются новыми для всего Кавказа, пять родов: *Lycosoides*, *Mysmena*, *Orchestina*, *Trygetus* и *Tuberta* ранее не были известны в фауне бывшего

Советского Союза. Два рода *Mysmena* и *Tuberta* впервые зарегистрированы на территории Азии. Описано три вида новых для науки: *Lycosoides lehtineni* sp.n. (♀), *Paracedicus feti* sp.n. (♂♀) и *Trygetus jacksoni* sp.n. (♀), кроме того, приведены иллюстрированные описания еще пяти видов: *Leptonetella caucasica* Dunin, 1990 ? (♀), *Howaia mogera* (Yaginuma, 1972) (♂♀), *Nesticella nepalensis* (Hubert, 1973) (♂ из северной Индии), *Orchestina* sp. (♀) и *Palpimanus sogdianus* Charitonov, 1946 ? (♂♀). Впервые описана самка, возможно относящаяся к *L. caucasica*. Статус двух подродов ранее включавшихся в *Cedicus* Simon, 1875 повышен до родового: *Paracedicus* Fet, 1993 stat.n., *Cedicoides* Charitonov, 1946 stat.n. *Howaia* Lehtinen & Saaristo, 1980 выведен из синонимии с *Nesticella* Lehtinen & Saaristo, 1980. Предложено четыре новых комбинации: *Paracedicus ephthalitus* (Fet, 1993) comb.n., *Paracedicus gennadii* (Fet, 1993) comb.n., *Cedicoides parthus* (Fet, 1993) comb.n. и *Cedicoides maerens* (Simon, 1889) comb.n. ex *Cedicus*. Впервые в фауне Кавказа и бывшего СССР отмечена *Cryphoea thaleri* Wunderlich, 1995 из Кабардино-Балкарии. Установлено что *Howaia mogera* (Yaginuma, 1972) имеет кавказо-дальневосточный (пацифический) дизъюнктивный ареал.

Introduction

Azerbaijan, a country lying in south Caucasus, is the largest of the three trans-Caucasian republics (Azerbaijan, Georgia, and Armenia). According to most common geographical subdivisions of Eurasia (cf. the Time Atlas, Rand McNally Atlas) the border between the two subcontinents lies along the Caucasus Major and therefore Azerbaijan belongs in Asia.

In comparison to most parts of the former Soviet Union, and Asia particularly, spiders in Azerbaijan are relatively well studied. According to the number of



Figs. 1–3. Epigyne of *Lycosoides lehtineni* sp.n., ventral, dorsal and behind views, respectively. Scale = 0.1 mm.
Рис. 1–3. Эпигина *Lycosoides lehtineni* sp.n., вид снизу, сверху и сзади. Масштаб 0,1 мм.

recorded species (559) it has the fourth largest fauna after Russia (1974 species), Ukraine (830) and Kazakhstan (719) [cf. Mikhailov, 2002]. With 37 recorded families, Azerbaijan, Russia, Ukraine and Georgia shared second place in family diversity. Turkmenistan, with 39 families, occupied first place.

Within the Caucasus, Azerbaijan was the most species and family rich country. Since the first catalogue was published [Mikhailov, 1997], the number of species reported in Azerbaijan has increased from about 500 to over 600 species [Mikhailov, 2002; Guseinov et al., unpublished catalogue]. It is worth mentioning that no other country in western Asia has such a diverse known spider fauna (cf. 127 species in Armenia, 456 — in Georgia [Mikhailov, 2002], or 141 species in Iran [Mozafarian & Marusik, 2001]). Comparing the diversity of the best studied family, the Salticidae, 67 species are known from Iran and 82 from [cf. Logunov et al., 2001; Logunov & Guseinov, 2001]. Azerbaijan is much better studied and has a more diverse fauna.

However, it has become clear that real spider diversity in this country remains unrevealed. In 2001 we undertook a joint three week trip into 3 parts of Azerbaijan. In the course of this short trip we found seven families (Desidae, Leptonetidae, Mysmenidae, Nesticidae, Palpimanidae, Prodidomidae and Theridiosomatidae) and 14 genera new to the country. Four of these families, namely Desidae, Mysmenidae, Palpimanidae, Prodidomidae are new to the whole Caucasus. Five genera are new to the former Soviet Union and two are new to Asia as a whole.

Material and methods

Most of material treated herein was collected by the authors. Specimens were collected by litter sifting, branch shaking and hand picking. Illustrations were made using both reflected and transmitted light microscopes with drawing "devices". Microphotographs were made using a SEM Jeol JSM-5200 in the Zoological Museum, University of Turku.

The following abbreviations have been used for collections and museums: CAS — Californian Academy of Sciences, San-Francisco; IZBA — Institute of Zoology, Baku; JWC — Jörg Wunderlich's personal collection, later probably in Senckenberg Museum; YMT — Yuri M. Marusik's temporary collection in Zoological Museum, University of Turku; ZMUM — Zoological Museum, University of Moscow; ZMUT — Zoological Museum, University of Turku.

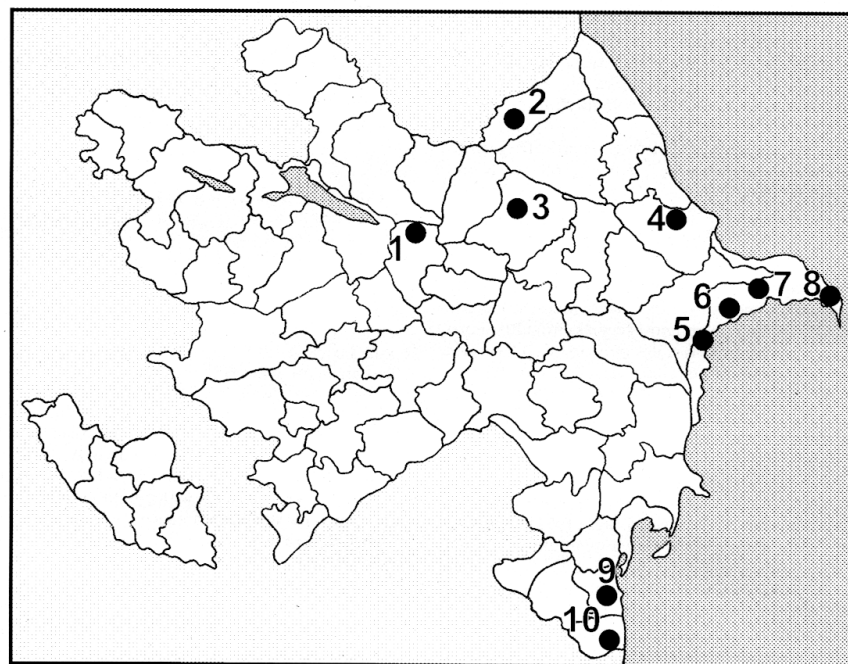
Collectors' names are also abbreviated: EG — Elchin F. Guseinov, YM — Yuri M. Marusik.

All measurements are given in mm.

Survey of new taxa

AGELENIDAE C.L. Koch, 1837

Until recently 15 species belonging to three genera of Agelenidae (*Agelena* Walckenaer 1805, *Histopona* Thorell, 1869 and *Tegenaria* Latreille, 1804) were known to occur in Caucasus [Mikhailov, 1997, 1998]. Recently one species and genus, new to Caucasus and the whole former USSR, namely *Agelescape affinis* (Kulczyński, 1901) was reported in Azerbaijan by Guseinov [1998, sub. *Agelena affinis*]. So, in fact, the number of genera known in Caucasus before this study was four. Ten species belonging to three genera were known from Azerbaijan. Below we list a fourth genus for Azerbaijan and fifth for Caucasus. It is also new to the whole former Soviet Union.



Map 1. Collecting sites and geographical areas in Azerbaijan. 1 — Turyanchai Reserve, 2 — Dogguzul, 3 — Khanaya, 4 — Tazakyand, 5 — Beyuk-Dash, 6 — Kergez Mt., 7 — Baku (Ganly-Gyol Lake & Bailov Park), 8 — Gyurgyan, 9 — Avroga, 10 — Istisu.

Карта 1. Точки сборов и географические области в Азербайджане. 1 — Түрянчайский заповедник, 2 — Доггузул, 3 — Ханая, 4 — Тазакян, 5 — Бейук-Даш, 6 — Кергез, 7 — Баку (озеро Ганлы-Гель и Байловский Парк), 8 — Гюрджян, 9 — Аврора, 10 — Истису.

Lycosoides Lucas, 1846

Nine species living exclusively in Mediterranean (from Morocco to Bulgaria and Israel) have been described in this genus [Platnick, 2002]. It was not previously reported from Azerbaijan, Caucasus or the former USSR as a whole. The new species from Azerbaijan extends the known range of the genus about 15° to the east.

Lycosoides lehtineni sp.n.

Figs. 1–3.

Material examined: Holotype 1 ♀ (ZMUM), central-eastern Azerbaijan, Apsheron Peninsula, near Ganly-Gyol Lake, 40°38'N, 49°83'E, under stone, 01.11.1994 (EG).

ETYMOLOGY: the new species is named after P.T. Lehtinen who made outstanding contribution to taxonomy of Agelenidae and many other taxa, and who also resurrected the genus *Lycosoides*.

DESCRIPTION. Male unknown.

Female. Body 12.5 long. Carapace: 6.25 long, 3.60 wide, light brown, cephalic part distinctly elongated and darker than thorax. Chelicerae dark reddish-brown. Sternum light-brown. Labium and maxillae dark brown with lighter distal parts. Abdomen grey with indistinct light pattern, venter lighter than dorsum. Spinnerets light brown, apical joint twice as long as basal. Epigyne as in Figs. 1–3, with transverse fovea, basal median septum, most of fovea covered with long hairs; trapezoidal in posterior view.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	3.63	1.75	2.75	3.25	1.75
II	3.63	1.85	2.50	3.25	1.63
III	3.50	1.75	2.65	3.50	1.63
IV	4.38	1.95	3.13	4.65	1.80

DIAGNOSIS. This new species is closely related to the trans-Mediterranean *L. coarctata* (Dufour, 1831) [cf. Blauwe, 1980: Figs. 21–22] and has a very similar epigyne. *L. lehtineni* sp.n. can be recognized by having a shorter and broader septum which is not widened in the top, height of fovea greater than that of basal part (opening is subequal in height to basal part of epigyne in *L. coarctata*). Vulva of the new species with unfused receptacula (fused in *L. coarctata*).

DISTRIBUTION. It is known from the type locality only (Map 1).

DESIDAE Pocock, 1895

There are some doubts about the size of this family. According to Platnick [2002] Desidae includes 178 species belonging to 37 genera. *Cedicus*, originally described in the Agelenidae by Simon, was transferred to the family Desidae by Lehtinen [1967]. Levy [1996] placed it in the Cybaeidae. Judging from the palpal and epigyne morphology, *Cedicus* has nothing in common with *Cybaeus* L. Koch, 1868, which has a "Dicyrta-type" of male palp (~*Tegenaria*, *Lycosoides*, etc.): embolus terminated close to cymbial base, strong

conductor, no tegular outgrowths), and somewhat similar to *Desis* Walckenaer, 1837 by having median apophysis, apical termination of embolus. However *Cedicus* and related genera may belong to another family. Therefore, we prefer to keep *Cedicus* in Desidae. Desidae is a new family for Azerbaijan and Caucasus at whole.

It seems that "*Cedicus*" was already reported from Azerbaijan sub *Cybaeus angustiarum* L. Koch, 1868 (see "Comments" in species description).

Cedicus Simon, 1875

Eleven species are known to belong to *Cedicus* [Platnick, 2002]. This genus is known from the eastern Mediterranean to Japan. Because the two easternmost species (from Myanmar and Japan) are known from females only and were found in non-arid areas (unlike all other species), it is possible that these species (*pumilus* Thorell, 1895 and *dubius* Strand, 1907) were misplaced. Six of the eleven species are known exclusively from Central Asia and therefore our finding of this genus in the arid Apsheron Peninsula is not surprising. Fet [1993] revised this genus in the former USSR. He already suggested the occurrence of this genus in adjacent territories like Iran, Afghanistan or Azerbaijan. Fet [1993] supported Charitonov [1946] in splitting of *Cedicus* into subgenera, and described a new subgenus *Paracedicus* Fet, 1993. We agree with his subdivision of the genus and go further, elevating the status of two subgenera into genera (see below). Judging from the palpal conformation of species assigned to this genus, it seems that the main reason for attributing species to *Cedicus* was a large colulus and modification of the palpal patella.

Paracedicus Fet, 1993 stat.n.

COMMENTS. In his revision of Central Asian *Cedicus*, Fet [1993] described a new subgenus *Paracedicus* for two species: *Cedicus ephthalitus* Fet, 1993 — type species and *C. gennadii* Fet, 1993. Both species are distributed in southwestern Turkmenistan.

Paracedicus ephthalitus comb.n. obviously differs from the type species of *Cedicus* (*C. flavipes* Simon, 1875, cf. Figs. 137–139 in Lehtinen [1967] and Figs. 4–8 in Blauwe [1973]) by the shape of the epigyne (median plate thinner than epigyne opening and placed inside of epigyne fovea, epigyne fovea wider than long) and palp (patella with two apophyses rather than one, embolus simple, not supported by long conductor and not curved apically, tegulum without blunt process). As *Paracedicus* was not previously used in combination with the specific epithet *gennadii* we here formalize the new combination *Paracedicus gennadii* (Fet, 1993) comb.n.

Charitonov [1946] described another subgenus *Cedicoides* (type species *Cedicus (Cedicoides) simoni* Charitonov, 1946) and included in it another species, *C. pavlovskii* Spassky, 1941. Fet [1993] added informally (without making new combinations) two more species to this taxon "first group (subgenus *Cedicoides* Charitonov, 1946)" = *Cedicoides* stat.n.: *Cedicoides parthus* (Fet, 1993) comb.n. and *Cedicoides maerens* (Simon, 1889) comb.n.

These three genera share modified palpal patella and large colulus, while having different shapes and combinations of tegular sclerites. Diagnoses of these taxa were given by Fet [1993].

The two genera occurring in Azerbaijan and Central Asia have very different conformations of the male palp. *Paracedicus* (Figs. 4, 5, 10, 11) has a retrolaterally rotated conductor,

on which the tip of the embolus rests. In *Cedicoides* the conductor is directed upward, its apical part widened and not contacting the embolus. In addition, *Cedicoides* has a terminal apophysis lacking in *Paracedicus*.

Paracedicus feti sp.n.

Figs. 4–11.

Cybaeus angustiarum (nec L. Koch, 1868): Dunin, 1984: 47 (misidentified).

Material examined: Holotype ♂ (ZMUM), central-eastern Azerbaijan, Apsheron Peninsula, Baku City, Bailov Park, 40°38'N, 49°84'E, 06.10.1994 (EG). Paratypes: 1 ♂ (ZMUT): central-eastern Azerbaijan, Apsheron Peninsula, Baku City, Bailov Park, 40°38'N, 49°84'E, 18.10.2002 (EG); 1 ♀ (ZMUM), central-eastern Azerbaijan, Apsheron Peninsula, Kergez Hill, 40°30'N, 49°62'E, 28.04.2000 (EG); 1 ♀ (ZMUT), central-eastern Azerbaijan, Gobustan, Beyuk-Dash Hill, 40°05'N, 49°25'E, 15.04.2001 (EG); 1 ♀ (JWC): same locality and date (YM).

ETYMOLOGY. The new species is named after our friend and colleague, Victor Fet who described this taxon and suggested the occurrence of this group in Azerbaijan.

DESCRIPTION. Male. Body 5.88–6.50 long. Carapace: 2.63–3.15 long, 2.0–2.13 wide, light brown. Chelicerae dark brown, darker than carapace. Legs and sternum light brown. Labium and maxillae dark. Abdomen from light grey to grey with pattern of two wide light bands reaching middle part of opistosoma and two series of indistinct spots behind bands. Venter of abdomen lighter than dorsum and sides. Book-lung opercula dark. Chelicerae with 3 equal sized retromarginal teeth and 5 promarginal teeth of which the 4th is larger than the others (as in two other *Paracedicus* spp.). Palp as in Figs. 4–6, 9–11, with two strong patellar apophyses and 5 small teeth between them, round tegulum, long membranous conductor starting in mid part of tegulum, long whip-like embolus.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	1.88	0.90	1.50	1.40	0.90
II	1.75	0.88	1.25	1.38	0.88
III	1.63	0.60	0.95	1.40	0.90
IV	2.00	0.88	1.58	1.75	0.88

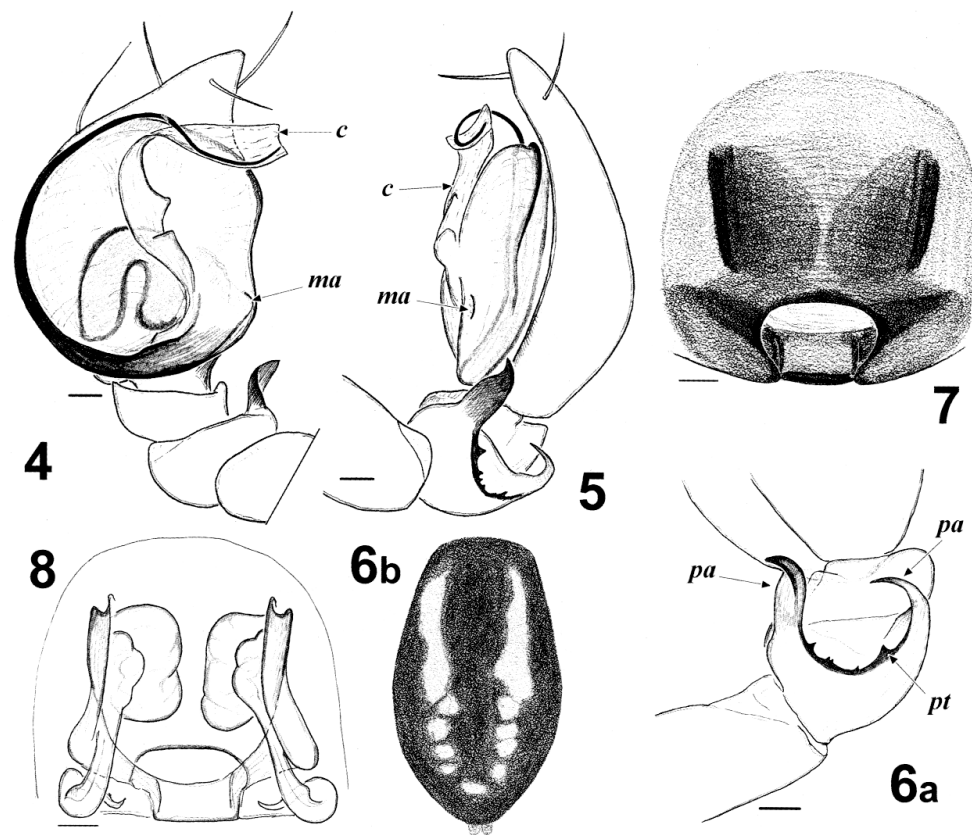
Female. Body 6.25–6.60 long. Carapace: 2.5–3.0 long, 1.65–2.1 wide, colored as in male but cephalic part darker than thorax. Abdomen black without pattern. Epigyne as in Figs. 7–8, oval shaped, with oval fovea and rectangular median plate; with two transparent lines over margins of fovea, endogina with highly raised receptacula.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	1.80	1.05	1.30	1.23	0.75
II	1.65	0.85	1.10	1.00	0.63
III	1.40	0.98	0.88	1.13	0.63
IV	1.88	1.00	1.50	1.50	0.75

Spination of legs in both sexes: I — femur: 1.1d, 1p, tibia: 1.2.2v, metatarsus: 1p, 2.2.2v; II — femur: 1.1d, 1p, tibia: 1.2.2v, metatarsus: 1p, 2.2.2v; III — femur: 1.1.2d, patella: 1p, 1r, tibia: 1.1d, 1.1p, 2.2.2v, metatarsus: 1.2.2d, 1p, 1r, 2.2.2v, tarsus: 1p, 1v; IV — femur: 1.1d, 1r, tibia: 1r, 2.2.2v, metatarsus: 1.1d, 1p, 1r, 1.1.2v, tarsus: 1p.

DIAGNOSIS. *P. feti* sp.n. is closely related to west Turkmenistanian *P. gennadii*, from which it can be separated by smaller median apophysis (*sensu* Fet), shape of conductor (its tip truncate, while in two other species tip is lanceolate), longer dorsal patellar apophysis, color pattern and shape of epigyne. From the type species of the genus it can be easily



Figs. 4–8. Copulatory organs and male abdomen of *Cedecus feti* sp.n. 4–5 — male palp, ventral and retrolateral view, respectively; 6a — part of palp showing patellar apophyses; 6b — abdomen; 7–8 — epigyne, ventral and dorsal view respectively. Scale = 0.1 mm. Abbreviations: *c* — conductor, *ma* — median apophysis (*sensu* Fet), *pa* — patellar apophyses, *pt* — patellar tooth.

Рис. 4–8. Копулятивные органы и брюшко самца *Cedecus feti* sp.n. 4–5 — палец, вид снизу и сзади; 6а — часть пальпы, показаны отростки и шипы колена пальпы; 6б — брюшко; 7–8 — эпигина, вид снизу и сверху. Масштаб 0,1 мм. Условные обозначения: *c* — кондуктор, *ma* — медиальный отросток (по Fet), *pa* — колленные отростки, *pt* — зубчики колена.

distinguished by having small teeth between patellar apophyses, the lack of long median apophysis and shorter embolus.

COMMENTS. It seems that this species was earlier found in Baku but was recorded *sub. Cybaeus angustiarum* by Dunin [1984]. According to Dunin's notes, a single male was collected at the same place as the holotype (of *C. feti* sp.n.) under a stone. This habitat, Bairov Park is a very dry place, but *Cybaeus* species occur in moist litter, and *C. angustiarum* is known as a mesophilic species [Hänggi et al., 1995]. On the other hand, the only known true *Cybaeus* in Caucasus (*C. abchasicus* Charitonov, 1947) was reported from western Georgia [Mikhailov, 1997]. It is also known that many species were identified by Dunin after the identification book of Tyschenko [1971], and according to the key in this book *Paracedecus* could be identified only as *Cybaeus* due to its large colulus.

DISTRIBUTION. *P. feti* sp.n. is known from the Apsheron Peninsula and adjacent Gobustan in eastern Azerbaijan (Map 1).

FILISTATIDAE Ausserer, 1867

Up to now 16 genera and 108 species of filistatids are known in the world [Platnick, 2002]. This family has a worldwide distribution. It is not found yet in the Ethiopian Region (Africa except for northern part). All Palaearctic species occur in southern regions (below 45°N).

Seven species of 4 genera belonging to Filistatidae are known to occur in the former USSR [Mikhailov, 1997]. Only one of them, *Filistata insidiatrix* (Forskål, 1775), was known from Azerbaijan and adjacent Georgia.

Pritha Lehtinen, 1967

This genus is known to comprise 22 species [Platnick, 2002]. Half of the species are known from females only and their generic placement is not clear. *P. nana* (Simon, 1868), the generotype, is the northernmost species of the whole

family. Our record of this genus is the first one for Azerbaijan and Caucasus as a whole.

Pritha crosbyi (Spassky, 1938)

Filistata c. Spassky, 1938: 575, fig. 2 (♂♀).

Material examined: 1 ♂ 28 ♀♀ & juv. (YMT), central-eastern Azerbaijan, Gobustan, Beyuk-Dash Hill, 40°05'N, 49°25'E, 15.04.2001 (YM); 1 ♂ 1 ♀ (ZMUIM), central-eastern Azerbaijan, Khyzy Dist., Tazakyand Vil., 40°82'N 49°36'E, 03.06.2000 (EG).

Comments. This species was transferred from *Filistata* to *Pritha* by Zonstein [1990]. Previously it was known to occur only in Central Asia. It was recorded in all Central Asian republics [Mikhailov, 1997]. Our record extends the known range of *P. crosbyi* about 5° to the west.

GNAPHOSIDAE Pocock, 1898

Until recently 85 species of ground spiders belonging to 21 genera were known in Caucasus until recently [Mikhailov, 1997]. Sixty-two of them, belonging to 20 genera, were reported from Azerbaijan [Mikhailov, 1997, 1998, 1999, 2000; Guseinov 2002; Guseinov & Rubtsova 2001]. Below we list one additional genus not previously reported from Azerbaijan and Caucasus.

Pterotricha Kulczyński, 1903

Forty-two species are known so far in this genus [Platnick, 2002]. With two exceptions, all species of *Pterotricha* are known from the Mediterranean region (from Morocco and Mauritania to Ukraine, and eastward to Uzbekistan and Iran [cf. Platnick, 2002]). Species described from South Africa and from Japan were never revised and may belong to other genera.

Pterotricha sp.

Material examined: 2 juv., central-eastern, Apsheron Peninsula, Kergez Hill, 40°30'N, 49°62'E, 19.04.2001 (YM); 1 ♂ 1 ♀ (YMT), central-eastern Azerbaijan, Apsheron Peninsula, Kergez Hill, 40°30'N, 49°62'E, 28.04.2000 (EG); 2 ♀♀ (YMT), central-eastern Azerbaijan, Gobustan, Beyuk-Dash Hill, 40°05'N, 49°25'E, 05.05.2001 (EG).

COMMENTS. Judging from the shape of the male palp and epigyne our specimens resemble *P. lesserti* Dalmás, 1921 known from Israel, Egypt and Arabia [Levy, 1995]. It seems that our specimens belong to an undescribed species. This species will be treated in a special paper devoted to the Azerbaijanian gnaphosids.

HAHNIIDAE Bertkau, 1878

Until recently two species and genera of hahniids (*Cryphoea* Thorell, 1870 and *Iberina* Simon, 1881) were known from Caucasus. They were recorded from the northern (Russian) Caucasus. Recently an additional genus, *Hahnia* C.L. Koch, 1841, was reported from Azerbaijan [Guseinov & Rubtsova, 2001].

Cryphoea Thorell, 1870

Eleven species are known to belong to *Cryphoea* [Platnick, 2002]. This genus has a Holarctic distribution, all species were found north of 38°N. This genus was not previously reported from Azerbaijan.

Cryphoea sp.

Material examined: 3 ♀♀ (YMT), northern Azerbaijan, Dogguzul, 2000 m, 41°45'N, 48°27'E, 05.08.2001 (EG).

COMMENTS. Specimens that we have differ from females of all known Palaearctic species. It is possible that Azerbaijanian population belongs to *C. thaleri* Wunderlich, 1995 known so far by males only from Turkey (type locality) and northern Caucasus (2 ♂♂ (IBPN), Kabardino-Balkaria, Adylsu [43.217°N, 42.683°E], 15–17.08.1978 (A.A. Zyuzin), personal data). *C. thaleri* is the single species of the genus known in Asia if one does not count the trans-Palaearctic *C. silvicola* (C.L. Koch, 1834) and the obscure Japanese *C. angularis* Saito, 1934 known by original description only.

Tuberta Simon, 1884

Two species are known so far in this genus. Both are distributed in western part of Europe (west from Carpathians). This genus was not previously reported from the former USSR, and our record is the easternmost in its range and the first in Asia.

Tuberta maerens (O. Pickard-Cambridge, 1863)

Tuberta m. Roberts, 1985: 166, fig. 74a (♂♀).

T. m. Heimer & Nentwig, 1991: 366, fig. 949 (♂♀).

T. m. Wunderlich & Hansen, 1995: 316, fig. 1–4 (♂♀).

Material examined: 3 ♂♂ (IZBA), northern Azerbaijan, Ismailly Distr., Khanaya Vil., 700 m, 40°81'N, 48°15'E, 21–23.07.2002 (H.A. Aliev & N.Yu. Snegovaya).

COMMENTS. Three males found in northern Azerbaijan fit well with the description provided by the authors listed above.

LEPTONETIDAE Simon, 1890

This family contains 180 species belonging to 15 genera [Platnick, 2002]. Leptonetidae has an almost exclusively Holarctic distribution. Only four species belonging to *Archoleptoneta* Gertsch, 1974 and *Leptoneta* Simon, 1872 *sensu lato* are known outside of Holarctic (Mexico and Panama). The majority of species of this family are known from Mediterranean and south-eastern Palaearctic (China, Japan and Korea). In the former Soviet Union, only one species of this family was known, *Leptonetella caucasica* Dunin, 1990 from a single locality in Georgia [Mikhailov, 1997]. Recently one more species was reported from the Russian Far East [Oliger et al., 2002].

Leptonetella Kratochvíl, 1978

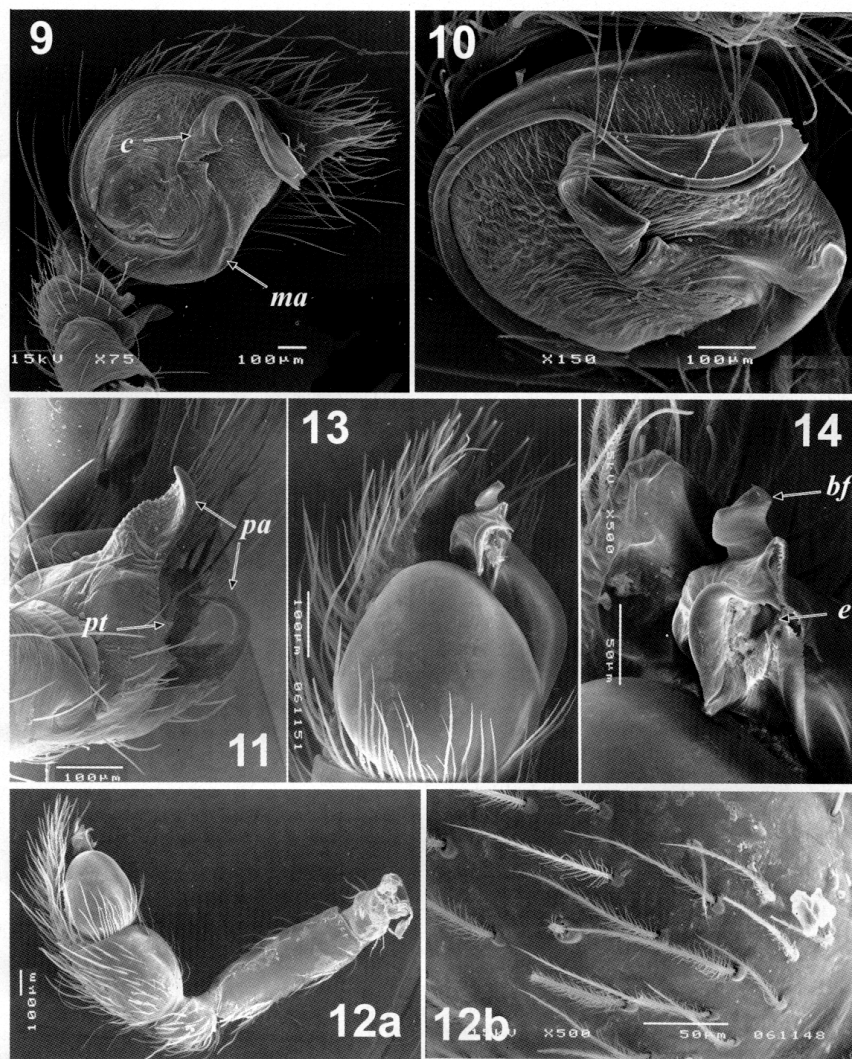
Five species are known to belong to this genus. All of them are known in eastern Mediterranean (from Greece to Georgia).

Leptonetella caucasica Dunin, 1990 ?

Figs. 15–16.

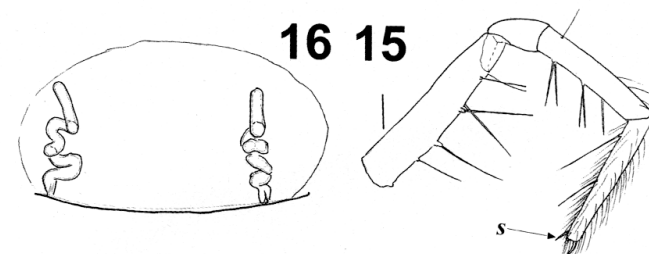
Material examined: 1 ♀ (YMT), south-eastern Azerbaijan, ca 10 km W of Astara Town, Istisu, 38°27'N, 48°47'E, on the border with Iran, 25.04.2001 (YM).

DESCRIPTION. Body 1.87 long. Carapace: 0.69 long, 0.57 wide. Coloration of carapace and abdomen uniformly brownish-black. Palp as in Fig. 15, with long macrosetae (spines) on femur and tibia placed on small tubercles, distal segment with two strong and long setae (weaker than mac



Figs. 9–14. Microphotographs of the male palps of *Cedricus feti* sp.n. (9–11) and *Palpimanus sogdianus* Charitonov (?) (12–14) (flagellate outgrowth of embolic complex broken). 9, 12a — ventral view showing femur-cymbium; 10 — view from above showing conductor and tip of embolus; 11 — patellar apophyses and teeth, retrolateral view; 12b — hairs of palpal patella; 13 — bulbus and cymbium; 14 — embolic complex. Abbreviations: *bf* — broken flagellate outgrowth, *c* — conductor, *ma* — median apophysis (sensu Fet), *e* — embolus, *pa* — patellar apophyses, *pt* — patellar tooth.

Рис. 9–14. Микрофотографии пальпуса самцов *Cedricus feti* sp.n. (9–11) и *Palpimanus sogdianus* Charitonov (?) (12–14) (отросток эмболюсного отдела обломан). 9, 12a — вид снизу, показаны все членики от бедра до цимбиума; 10 — вид сверху, показаны кондуктор и кончик эмболюса; 11 — отростки колена и зубчики, вид сзади; 12b — структура волосков на колоне пальпы; 13 — бульбус и цимбиум; 14 — эмболюсный отдел. Условные обозначения: *bf* — обломанный отросток эмболюсного отдела, *c* — кондуктор, *e* — эмболюс, *ma* — медиальный отросток (по Fet), *pa* — коленные отростки, *pt* — зубчики колена.



Figs. 15–16. Female of *Leptonetella caucasica* Dunin (?). 15 — palp, retrolateral view; 16 — epigyne, dorsal view. Scale = 0.1 mm. Abbreviation: *s* — spine.

Рис. 15–16. Самка *Leptonetella caucasica* Dunin (?). 15 — педипальпа, вид сзади; 16 — эпигина, вид сверху. Масштаб 0,1 мм. Условное обозначение: *s* — шип.

rosetae) and one ventro-apical spine. Epigyne as in Fig. 16, with two distinct spiraled ducts.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	1.54	0.21	1.54	1.40	0.94
II	1.14	0.20	1.00	0.86	0.57
III	0.97	0.19	0.87	0.79	0.37
IV	1.29	0.24	1.21	1.00	0.64

NOTE. While the epigyne is actually more complicated, two fertilization ducts are the only structures distinctly visible in either reflected or transmitted light. We also provide a figure of female palp hoping that this group has species specific spination. The distal segment of the female palp bears a claw and ventral spine. Such a character is known for at least two species from two genera: *Segrea sardinesis* Roewer, 1953 (cf. fig. 1e in Brignoli [1969]) and *Paraleptoneta fagei* Roewer, 1953 (cf. fig. 2e in Brignoli [1969]).

COMMENTS. As *L. caucasica* is known only from a single male, our identification is very provisional and the single female may be referable to the Turkish *L. deltshevi* (Brignoli, 1979) or to an undescribed species. We assigned our specimen to *L. caucasica*, known from Georgia because it is the nearest locality of any leptonetid. Generic placement of our specimens requires confirmation also. Our specimen is dark in color which is unusual for leptonetids.

LIOCRANIDAE Simon, 1897

Five species of liocranid spiders belonging to four genera were known in Caucasus [Mikhailov, 1997], of these 3 species of 2 genera occur in Azerbaijan. Recently [Guseinov, 2002] one more genus, *Agroeca* Westring, 1861, was reported from Azerbaijan. It was the first record of the genus in Caucasus. With our discovery of *Mesiotelus*, 5 species of four genera are known to occur in Azerbaijan.

Mesiotelus Simon, 1897

Fourteen species are known in this genus [Platnick, 2002]. With the exception of one species from Kenya that is probably misplaced, this genus has a south Palaearctic range and is known from the Canary Islands to Beijing. Species of this genus live in the so-called Ancient Mediterranean (rather dry countries) and in eastern China. However *Mesiotelus* was never reported from Azerbaijan or Caucasus as a whole.

Meisiotelus sp.

Material examined: 1 ♀ (ZMUM); northern Azerbaijan, Ismailly Distr., Khanaya Vil. 700 m, 40°81'N, 48°15'E, 22.06.2002 (EG).

Comments. Judging from illustrations provided by various authors our specimen seems to be related to Central Asian *M. kulczynskii* Charitonov, 1946. Probably the Azerbaijanian population belongs to an undescribed species. Revision of all liocranid species occurring in Azerbaijan will be given in a separate paper.

LYCOSIDAE Sundevall, 1833

Eighty-three species of wolf spiders belonging to 12 genera [Mikhailov, 1997; Zyuzin & Logunov, 2000] were known until recently in Caucasus. Fifty-six of them (from 12 genera) were known to occur in Azerbaijan. Two additional species, *Pardosa bifasciata* (C.L. Koch, 1836) and *P. jergeniensis* Ponomarev, 1979, were recently reported from Azerbaijan recently [Guseinov and Rubtsova, 2001; Guseinov, 2002]. Our collections extend the number of lycosid genera in Caucasus to 14 and number of species in Azerbaijan to 59. A survey of all Azerbaijanian wolf spiders and description of new taxa will be given in a special paper (Marusik et al., 2003, in press).

Evippa Simon, 1882

Thirty-five species are known to belong to this genus. *Evippa* species are distributed in south Palaearctic, southern China, north parts of India and Africa (southward to Congo). Ten species of this genus are known from the former USSR. All of them, except *E. eltonica* Dunin, 1994 are known from Central Asia or South Siberia. Until recently this genus was unknown from Azerbaijan and Caucasus as a whole. The nearest records of *Evippa* lie in northern Ciscaasia (Elton Lake) and Turkmenistan.

Evippa sp. 1

Material examined: 1 ♂ (YMT), central-eastern Azerbaijan, Gobustan, Beyuk-dash hill, 40°05'N, 49°25'E, 15.04.2001 (EG).

COMMENTS. This is a new species closely related to *E. eltonica* Dunin, 1994 and *E. sibirica*. Its description will be published in a separate paper.

Evippa sp. 2

Material examined: 1 ♀ (YMT), central-eastern Azerbaijan, Apheron Peninsula near Ganly-Gyol Lake, 40°38'N, 49°83'E, 11.05.1999 (EG).

COMMENTS. This is a new species related to *E. schenkeli* Šternbergs, 1979 and *E. badchysica* Šternbergs, 1979. Its description will be published in a separate paper.

Wadicosa Zyuzin, 1985

This genus is known to include only five species. All of them, except *W. quadrifera* (Gravely, 1924), are distributed in south Palaearctic. *E. quadrifera* is known from India and Sri Lanka [Platnick, 2002]. Our record of this genus is the first one for Azerbaijan and Caucasus as a whole.

Wadicosa fidelis (O. Pickard-Cambridge, 1872) ?

Wadicosa f.: Song et al., 1999: 202C, G (♂♀).

Material examined: 3 ♂♂ 2 ♀♀ 2 juv. (YMT), south-eastern Azerbaijan, ca 10 km W of Astara Town, Istisu, 38°27'N, 48°47'E, on the border with Iran, 25.04.2001 (YM).

COMMENTS. This is the most widely distributed species in the genus and is known from western Europe to Japan. Our identification was confirmed, with some uncertainty, by T. Kronstedt. Figures of this species provided by different authors [e.g. Wunderlich, 1992: fig. 727–728 and Song et al., 1999: 202C, G] seem to belong to two different species, so *W. fidelis* may have a smaller range and be restricted to the western Palaearctic only. Our specimens fit well with the figures provided by Song et al. [1999].

MYSMENIDAE Petrunkevitch, 1928

This is a rather small family which includes 96 species belonging to 24 genera [Platnick, 2002]. Mysmenidae has a worldwide distribution. Within Palaearctic it is known south of 50°N. Within the former Soviet Union this family was reported only recently [Marusik & Koponen, 2000] and only from the Russian Far East. So, records of two species belonging to two genera are the first in Azerbaijan, the whole Caucasus and western part of the former Soviet Union.

Representatives of this family occurring in Palaearctic can be recognized by small size (less than 2 mm), high carapace (in some species higher than long), globular abdomen and male palp, as well as by modification of leg I in both sexes: presence of 1–3 prolateral spines on male tibia-metatarsus and sclerotised spot on the ventro-apical position of the female femur.

Mysmena Simon, 1894

Nine species are currently placed in this genus [Platnick, 2002]. Taking into account the rather unusual distribution of this genus: Trinidad, Guyana, St. Helena, Southern Europe, Samoa, Niue, Tasmania, Fiji, New Guinea, it is easy to assume that *Mysmena* is a polyphyletic taxon. While *Mysmena* has a very wide range, none of its species were reported from Asia, so our record is a first for Azerbaijan, Caucasus and Asia as a whole.

Mysmena leucoplagiata (Simon, 1879)

Mysmena l. Kraus, 1967: 388, fig. 1–11 (♂♀).

M. l. Loksa, 1973: 283, fig. 1–8 (♂♀).

M. l. Wunderlich, 1980: 267, fig. 24–26 (♂♀).

Material examined: 1 ♂ 1 ♀ (ZMUM), central Azerbaijan, Turyanchai Reserve, 40°67'N, 47°39'E, 03.10.1994 (S.D. Dashdamirov).

COMMENTS. This species can be easily separated from another Caucasian mysmenid by small size (less than 1.2 mm), by having only one spine on the metatarsus of male leg I, and a long hair-like embolus not modified at the tip.

M. leucoplagiata is probably the smallest spider both in Azerbaijan and in the former Soviet Union. A male from Azerbaijan reaches only 0.79 mm. Until recently this species was known to be distributed in southern Europe eastward to Hungary and our record extends the known range about 30° into.

Mysmenella Brignoli, 1980

Mysmenella is a small genus of minute spiders. Up to now only six species distributed from Rwanda to Hawaii are known. This genus was recently reported from the Russian Far East [Marusik & Koponen, 2000], but was never recorded from Azerbaijan or Caucasus or even the European part of the former Soviet Union.

Mysmenella jobi (Kraus, 1967)

Mysmena j. Kraus, 1967: 392, fig. 12–28 (♂♀).

Mysmena j. Wunderlich, 1980: 267, fig. 19–23 (♂♀).

M. j. Thaler & Nollatscher, 1990: 174, fig. 31–34 (♂).

Material examined: 91 ♂♂ 9 ♀♀ (YMT), south-eastern Azerbaijan, Lenkoran Distr., environs of Aurora Vill., 38°40'N, 48°52'E, 23–28.04.2001 (YM); 11 ♂♂ 9 ♀♀ (ZMUM), south-eastern Azerbaijan, ca 10 km W of Astara Town, Istisu, 38°27'N, 48°47'E, on the border with Iran, 25.04.2001 (YM).

COMMENTS. This species can be easily separated from *Mysmena leucoplagiata* by larger size, by having 3 spines on male leg I, and a broad embolus with many turns in apical portion. Most of specimens were found under low (ca. 1 m) bushes and among grass near bushes, and a few in deciduous forest with dry leaves.

Our specimens fit well illustrations provided in the original description and other papers published by European authors. According to catalogue data [Platnick, 2002] this species has a Palaearctic distribution and was reported from Europe and Far East Asia. Our study of numerous specimens from Maritime Prov., Beijing, Sakhalin and Moneron Islands and from Azerbaijan reveals that the east and west Palaearctic populations belong to different species. Therefore the record from Azerbaijan is the southeasternmost record of this species in Eurasia.

NESTICIDAE Simon, 1894

One hundred and ninety-five species of nesticids belonging to about 10 genera are known in the world [Platnick, 2002]. This family is broadly distributed but not reported from Australia and New Zealand. There are three centers of high species diversity for this family in Holarctic: Nearctic, Mediterranean and Japan. Thirteen nesticid species belonging to four genera are known from the former USSR. Eight of them were reported from Caucasus (Georgia and north Caucasus), but none of them were found in adjacent Azerbaijan. Our record is the first for the country.

Howaia Lehtinen & Saaristo, 1980

Thirteen species were attributed to *Howaia* by Lehtinen and Saaristo [1980], Marusik [1987] and Gray [1989]. This

genus was synonymized by Wunderlich [1986] with *Nesticella* Lehtinen & Saaristo, 1980 without clear argumentation. The two genera were described in the same paper and description of *Howaia* appeared on page 53 and that of *Nesticella* on page 55. The type species of *Howaia*, *H. mogera* (Yaginuma, 1972) has a wide distribution (Hawaii, Fiji, Japan) and is much better known than the type species of *Nesticella* (*N. nepalensis* (Hubert, 1973)). The latter species has much smaller range. From these points it would be more logical to give the priority to *Howaia*.

To our mind, the diagnosis provided by Lehtinen & Saaristo [1980] is good enough to discriminate two genera: unfused (free) paracymbium in *Nesticella* contrary to all other nesticids, (cf. Figs. 20 & 24). *Nesticella* has modified male palpal tibia (Fig. 24) with three outgrowths that possibly fix the paracymbium. Another character that is possibly related to the modified paracymbium is the elevation of tegulum over the base of cymbium (cf. Figs. 17 & 22). In *N. nepalensis* the tegulum raises over the base of cymbium higher than in *H. mogera*. It is worth mentioning that *N. nepalensis* and related species, like *N. taurama* Lehtinen & Saaristo, 1980 and *N. robinsoni* Lehtinen & Saaristo, 1980, have a much more complicated paracymbium than *Howaia* and the apical portion of their conductor and embolus is turned up. Consequently, we do not agree with the synonymization of these two genera made by Wunderlich [1986].

Howaia seems to have the widest range among the family, nevertheless it was never reported from western Palaearctic, and our record is the westernmost in Palaearctic. This genus, like another few taxa, has an unusual Caucaso-Manchurian disjunctive range in Palaearctic (Leptonetidae, Oonopidae, Theridiosomatidae, Argyrodes, Meta, Phorocidia, Octonoba, and about 7 species). These taxa are present in Caucasus, and then "reappear" at the same latitudes only in Far East (south Far East Russia, northwestern China, Japan and Korea).

Howaia mogera (Yaginuma, 1972)

Figs. 17–21.

Howaia m. Lehtinen & Saaristo, 1980: 53, fig. 7–9, 22–23, 29b (♂♀).

Nesticus m. Gertsch, 1984: 44, fig. 185, 195–197 (♂♀).

Nesticus m. Chikuni, 1989: 45, fig. 2 (♂♀).

Nesticella m. Song et al., 1999: 86, fig. 37B–C, H (♂♀).

Material examined: 1 ♂ 2 ♀♀ 4 juv. (ZMUM), south-eastern Azerbaijan, Lenkoran Distr., environs of Aurora Vill., 38°40'N, 48°52'E, 23–28.04.2001 (YM). 1 ♂ 2 ♀♀ (ZMUT): JAPAN, Honshu Isl., Hiroshima Pref., Fukuyama-shi, Minoshima, 26.05.1992 (leg. & det. Y. Ihara); 1 ♀ (ZMUM): Hiroshima Pref., Takano-cho, Hiba-gun, Kenashiyama-farm, 24.07.1988 (leg. & det. Y. Ihara); 1 ♀ (ZMUM): Hiroshima Pref., Toyota-gun, Ōsaki-chō, Okushi, 06.05.1993 (leg. & det. Y. Ihara).

DESCRIPTION. Male. Body 2.05 long. Carapace: 0.95 long, 0.88 wide, brown, cephalic part with grey pattern of 3 converging and fusing lines. Median line starts from median

grove and terminates between AME. Lateral lines terminate behind PLE. Legs yellow-brown. Abdomen dark grey, with wide light dorsal band reaching mid part of abdomen; venter with lateral rows of light spots going from epigastral furrow to spinnerets. Palp as in Figs. 17–20, with relatively small paracymbium bearing one finger-like apophysis directed to tegulum, conductor (= "terminal apophysis" sensu Lehtinen & Saaristo [1980]) longer than wide, covered with numerous denticles.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	1.71	0.47	1.64	1.39	0.63
II	1.23	0.37	1.03	1.00	0.60
III	1.00	0.31	0.76	0.80	0.49
IV	1.50	0.36	1.31	1.14	0.57

Female. Body 2.63 long. Carapace: 1.00 long, 0.93 wide. Coloration as in male. Epigyne as Fig. 21a, rather simple, with small transparent round receptacula and thick ducts going from them to openings, small "scape" placed between openings.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	1.54	0.43	1.43	1.20	0.66
II	1.07	0.36	0.79	0.71	0.54
III	0.91	0.33	0.49	0.86	0.43
IV	1.21	0.40	1.07	0.97	0.57

COMMENTS. Comparison between Caucasian and Japanese specimens reveal no clear differences in the structure of copulatory organs. From other Caucasian nesticids this species can be easily recognized by small size (less than 2.5 mm), paracymbium with single apophysis, small conductor, and simple epigyne. All specimens were collected among the litter in the edge of relic Lenkoran forest.

DISTRIBUTION. Caucaso-Pacific disjunctive range, besides Azerbaijan reported from Japan, China, Korea, Hawaii and Fiji. Taking to account new find of this species in Caucasus, *H. mogera* has the widest range among all nesticids.

OONOPIDAE Simon, 1890

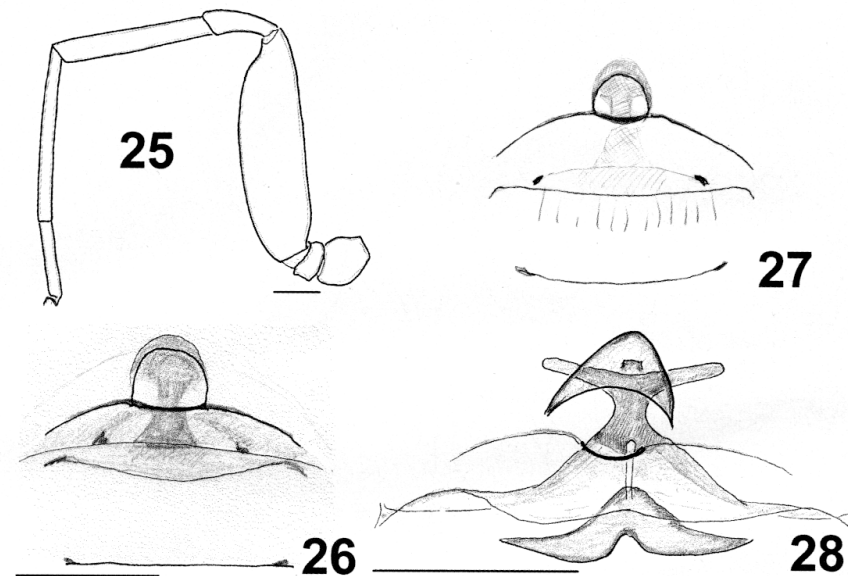
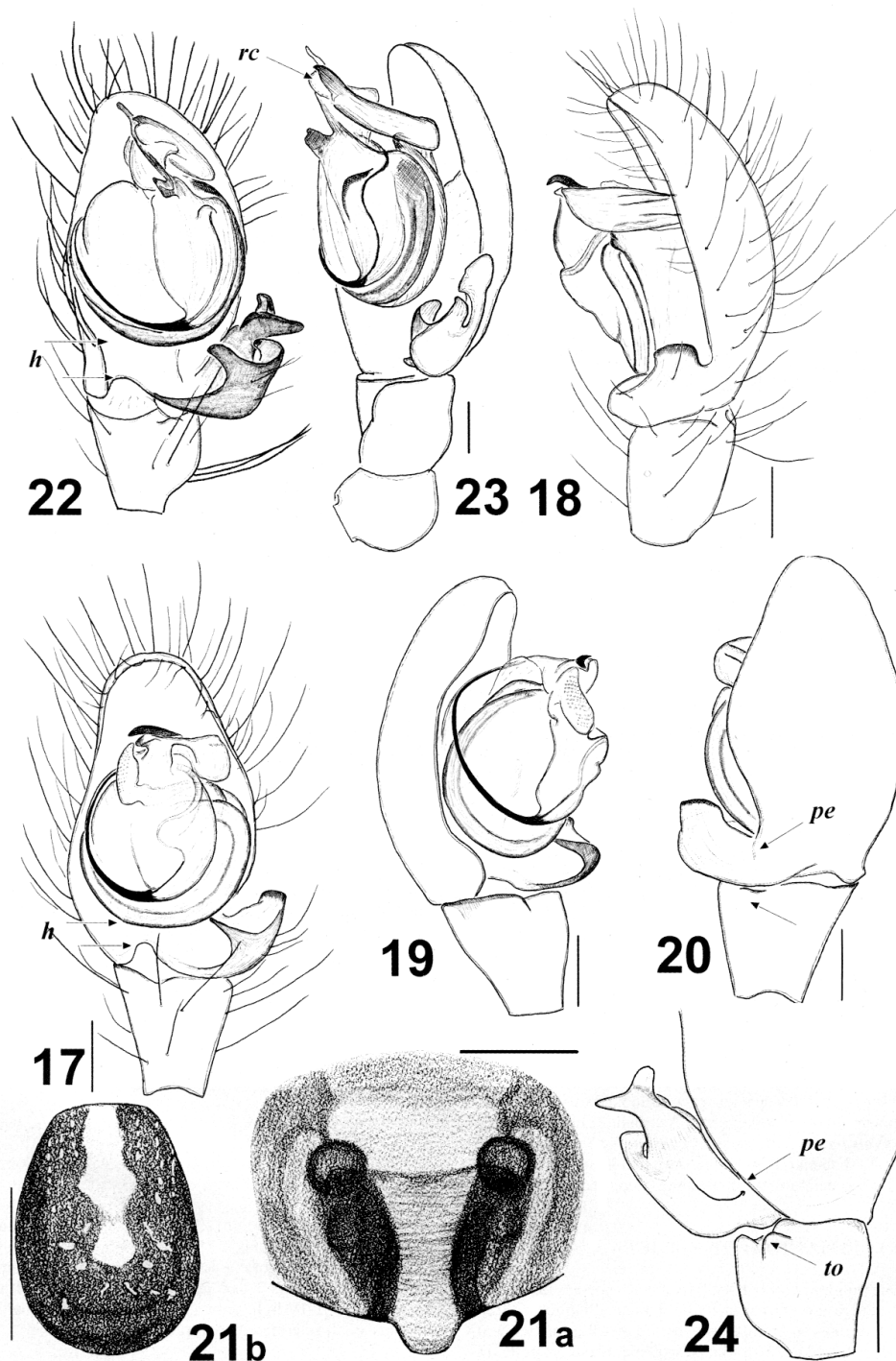
While this family has 450 species worldwide [Platnick, 2002] only three of them are known to occur in the former Soviet Union [Mikhailov, 2002]. Two species of two genera: *Oonops* Templeton, 1935 (*O. pulcher* Templeton, 1935) and *Silhouettella* Benoit, 1979 (*S. loricatula* (Roewer, 1942) = *Dysderina l.* = *Gamasomorpha l.*) were known in Azerbaijan and Caucasus at whole [Mikhailov, 1997, 1998].

Orchestina Simon, 1882

Thirty-six species of this genus are known so far [Platnick, 2002]. It is distributed almost worldwide. *Orchestina* was not found in New Zealand and Australia only. It seems

Figs. 17–24. *Howaia mogera* (Yaginuma) (17–21) from Lenkoran and *Nesticella nepalensis* (Hubert) (22–24) from Uttar Pradesh, India. 17, 22 — male palp, ventral view; 18, 23 — male palp, retrolateral view; 19 — male palp, prolateral view; 20, 24 — male palp, dorsal view; 21a — epigyne, ventral view; 21b — female abdomen. Scale in all figures = 0.1 mm except for Fig. 21b (= 1 mm). Figs. 20 and 24 given in the same scale to show differences in sizes. Abbreviations: *b* — height of cymbial base, *pe* — paracymbial edge, *rc* — raised tip of conductor, *to* — tibial outgrowths.

Рис. 17–24. *Howaia mogera* (Ягинума) (17–21) из Ленкорани и *Nesticella nepalensis* (Хуберт) (22–24) из Уттар Прадеша, Индия. 17, 22 — палецус, вид снизу; 18, 23 — палецус, вид сзади; 19 — палецус, вид сверху; 20, 24 — палецус, вид сзади; 21a — эпигина, вид снизу; 21b — брюшко самки. Масштаб на всех рисунках кроме рис. 21b равен 0,1 мм, на рис. 21b = 1 мм. Рис. 20 и 24 даны в одном масштабе, чтобы показать разный размер палецусов. Условные обозначения: *b* — высота основания цимбиума, *pe* — край парацимбиума, *rc* — приподнятый кончик кондуктора, *to* — выросты голени.



Figs. 25–28. Leg IV and epigyne of *Orchestina* sp. 25 — leg IV of female; 26–27 — epigyne, ventral view, different turns; 28 — epigyne, dorsal view. Scale = 0.1 mm.

Рис. 25–28. Нога IV и эпигина *Orchestina* sp. 25 — нога IV самки; 26–27 — эпигина, вид снизу, разные аспекты; 28 — эпигина, вид сверху. Масштаб 0,1 мм.

that species diversity of this group is much higher. However judging from the palpal morphology this genus is polyphyletic, and single character uniting all *Orchestina* species is the swollen (=jumping) femur IV (cf. Fig. 25). This is a new genus for Azerbaijan, Caucasus and former Soviet Union at whole.

Orchestina sp.

Figs. 25–28.

Material examined: 3 ♀♀ (YMT), central-eastern Azerbaijan, Apsheron Peninsula, Kergez Hill, 40°30'N, 49°62'E, 09.04.2001 (YM)

COMMENTS. Specific placement of our specimens is impossible because of the lack of males. Most probably the species from Azerbaijan belongs to an undescribed species. Its epigyne is rather complicated (Figs. 26–28). It looks rather different from various views, and its margins are almost indistinct on pale surface.

It seems that this species was overlooked by P. Dunin, E. Guseinov and other collectors in Azerbaijan and was treated as *Oonops pulcher*. Because *Orchestina* was missing in the key of Tyshchenko [1971] and only two genera were listed there, all specimens without scuta were identified as *O. pulcher*.

PALPIMANIDAE Thorell, 1870

One hundred and twenty-five species species belonging to 15 genera are known in Palpimanidae [Platnick, 2002]. This family has an almost a worldwide distribution, while it was never found in Australia, New Zealand and Nearctic. In

Palearctic this family occurs south of 43°N. In the former Soviet Union this family was known from three species of *Palpimanus* distributed in Central Asia only. Our record from Azerbaijan is a first record of the family in Caucasus at whole.

Palpimanus Dufour, 1820

According to Platnick's [2002] catalogue this genus includes 35 species. Palearctic representatives of this genus were revised by Kulczyński [1909] and Platnick [1981].

Palpimanus sogdianus Charitonov, 1946 ?

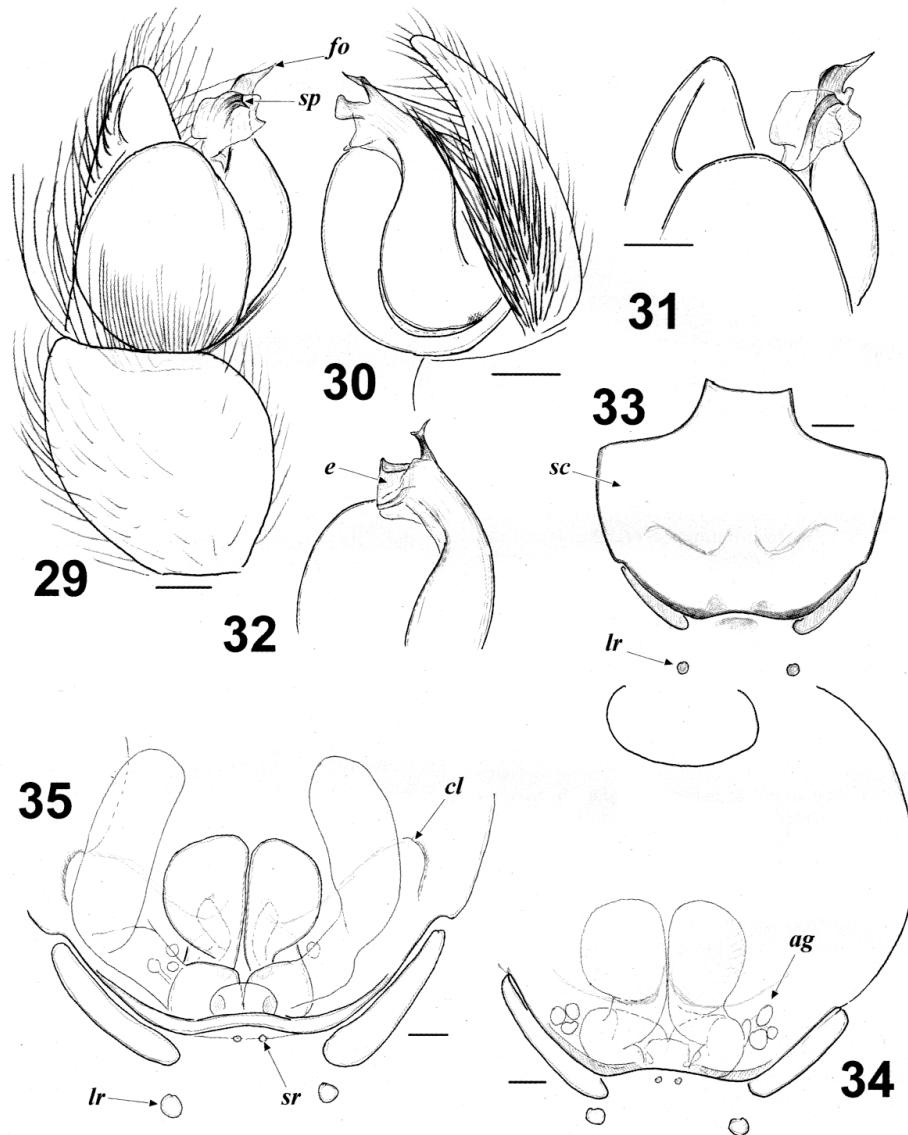
Figs. 12–14, 29–35.

Palpimanus s. Charitonov, 1946: 22, fig. 12–13 (♂♀). Types in Perm State University, not examined.

Material examined: 2 ♀♀ (ZMUM), central-eastern Azerbaijan, Gobustan, Beyuk-Dash Hill, 40°05'N, 49°25'E, 28.05.1999 (EG); 2 juv., same locality, 15.04.2001 (YM). 1 ♂ 1 ♀ (ZMUT); IRAN, Tehran Prov., -80 km E of Tehran, Damavand area, Aroo Vil., 52°27'E, 35°40'N, 15.06.2000 (YM).

DESCRIPTION. Male (from Iran). Body 4.40–5.02 long. Carapace length 1.95–2.55 long, 1.50–2.00 wide. Coloration as in female.

Female (from Azerbaijan). Body 5.60–5.75 long. Carapace length 2.05–2.18 long, 1.75 wide, red-brownish, cephalic part raised over thorax, slope with deep pit. Sternum, labium, maxillae, legs I and epigynal scutum colored as carapace. Legs II–IV light brown. Abdomen yellowish with numerous small sclerotized dots spread over the whole



Figs. 29–35. Copulatory organs of *Palpimanus sogdianus* Charitonov (?). 29 — male palp, prolateral view; 30 — male palp, retrolateral view; 31–32 — apical portion of the bulb, different turns showing embolic complex; 33 — epigyne together with scutum, ventral view, before maceration; 34 — epigyne together with scutum, ventral view after maceration; 35 — epigyne together with scutum, dorsal view. Scale = 0.1 mm. Abbreviations: ag — accessorial glands, cl — “C”-shaped sclerotised line, e — embolus, fo — flagellated outgrowth, lr — large round sclerite, sc — “epigynal” scutum, sp — sclerotised part of embolus, sr — small round sclerite.

Рис. 29–35. Копулятивные органы *Palpimanus sogdianus* Charitonov (?). 29 — палец, вид спереди; 30 — палец, вид сзади; 31–32 — верхняя часть булбуса, виды из разных положений показывающие структуру эмболического отдела; 33 — эпигина вместе со скутумом интактная, вид снизу; 34 — эпигина после вываривания в щёлочи, вид снизу; 35 — эпигина, вид сверху. Масштаб 0,1 мм. Условные обозначения: ag — вспомогательные железы, cl — “C”-образная склеротизованная линия, e — эмболюс, fo — флаговидный отросток, lr — крупный склерит, sc — “эпигинальный” скутум, sp — склеротизованная часть эмболюса, sr — маленький склерит.

opistosoma, preepigastral area (from furrow to pedicel), and part of area above pedicel form solid scutum.

Length of leg joints in ♀:

	femur	patella	tibia	metatarsus	tarsus
I	1.55	1.20	1.00	0.55	0.55
II	1.18	0.70	0.88	0.55	0.40
III	1.05	0.63	0.75	0.73	0.40
IV	1.38	0.80	1.13	0.95	0.55

Copulatory organs. Palp as in Figs. 12–14, 29–32, with complicated embolic complex (Fig. 13–14, 29–32). Embolic complex looks different from various views. Observed with a light microscope only the two most sclerotised parts (prongs) apical one (apophysis) and part of embolus proper have clear margins, all other parts are laminar and transparent. In scanning microscope it is clear that embolus proper is rather complicated and composed from several lamella. Epigyne as in Figs. 33–35, in reflected light view only two large round sclerites are visible and one transverse sclerite with indistinct margins close to epigynal plate (Fig. 33), but in a dissected epigyne, 2 pairs of round sclerites are visible (Figs. 34–35). One pair of small sclerites can be seen after maceration on the place of transverse one (cf. Figs. 33–35). Internal structure is rather complicated and it was more or less properly illustrated only for *P. gibbulus* (Dufour, 1820) [cf. fig. 296 in Forster & Platnick, 1984]. Two small illustrations of endogina provided by Charitonov [1946] do not provide sufficient detail for comparison with other Asian species. However it is clear that besides elongated receptacula (sac shaped) there are several small and transparent accessory glands. It looks as if the endogina are in some way connected with the book lungs or a second pair of “receptacula” (Fig. 35), but this is not clear. Inside of the epigynal scutum there are two sclerotised “C”-shaped lines (Fig. 35) beside of “book lungs” and above the longitudinal postepigynal sclerites.

NOTE. Judging from the morphology of palp and epigyne it seems that *P. sogdianus* is most closely related to *P. schmitzi* Kulczyński, 1909 (occurring in Syria and Israel) by having a similar embolic complex, 2 pairs of sclerotised spots close to epigyne and spermatheca fused near epigyne openings [cf. pl. 26, fig. 2 in Kulczyński [1909] and figs. 8 & 17 in Platnick [1981]].

COMMENTS. We were unable to study types or topotypes of *P. sogdianus* deposited in the Perm State University. Our identification was based on comparative study of two females from Azerbaijan and several females collected together with males from northern Iran. Epigyne and palp illustrations provided by Charitonov [1946] fit well our specimens from Iran, and Iranian females have no distinct differences with those from Azerbaijan so it is reasonably safe to conclude that our specimens most probably belong to *P. sogdianus*. When adult males are found from the Apsheron Peninsula we will compare them with the types.

PRODIDOMIDAE Simon, 1884

One hundred and sixty species of prodidomids belonging to 26 genera and distributed worldwide are known [Platnick, 2002]. Within Palaearctic, spiders of this family were known in Mediterranean (Spain and Greece) and in Central Asia. In the former Soviet Union, two species belonging to two genera were known from Turkmenistan and southern Kazakhstan [Mikhailov, 1997]. Until recently the northwesternmost record of the family in Asia was from Turkmenistan. Our record extends the known range of the family in Asia significantly to the west and is the first from Azerbaijan and Caucasus as whole.

Prodidomus Hentz, 1847

So far, 48 species have been attributed to this genus [Platnick, 2002]. Judging from its unusual distribution (Nearctic, Neotropics, Central and southeastern Asia, Hawaii, Australia, Africa) it is easy to suggest that the genus is polyphyletic.

Prodidomus sp

Material examined: 2 ♂♂ 2 ♀♀ (ZMUM), central-eastern Azerbaijan, Apsheron Peninsula, Baku, Bailov Park, 40°38'N, 49°84'E, 20.09.1999 (EG); 2 ♀♀ (ZMUT), central-eastern Azerbaijan, Beyuk-Dash Hill, Gobustan, 40°05'N, 49°25'E, 15.04.2001 (YM).

COMMENTS. Specimens from Azerbaijan may belong either to an undescribed species or to *P. redikortsevi* Spassky, 1940 known from Turkmenistan and Kazakhstan. We can not provide illustrated description of our material because it was shipped to V.I. Ovtsharenko who is conducting a revisional study of this group.

TETRAGNATHIDAE Menge, 1866

Fifteen species of five genera of tetragnathid spiders are known from Caucasus [Mikhailov, 1997]. Eleven of them belonging to four genera were reported from Azerbaijan.

Zygiella F.O. Pickard-Cambridge, 1902

Twenty-four species distributed in Holarctic, Indo-China and Neotropics are listed in this genus [Platnick, 2002]. Placement of this genus in Tetragnathidae is doubtful. It is listed among Araneidae by Platnick [2002], but judging from the conformation of the male palp and epigyne it belongs to Tetragnathidae. We agree with Levy [1987] that *Zygiella* is a polyphyletic genus, and we already have placed “*Z. stroemi* (Thorell, 1870) in Araneidae [Marusik et al., 2000].

Our record is the first record of the genus in Azerbaijan. Two species of *Zygiella* are known from Georgia [Mikhailov, 1997].

Zygiella x-notata (Clerck, 1757)

Zygiella x. Levi, 1974: 276, fig. 21–31, 57–58 (♂♀).

Z. x. Heimer & Nentwig, 1991: 66, fig. 143 (♂♀).

Z. x. Roberts, 1995: 334, fig. (♂♀).

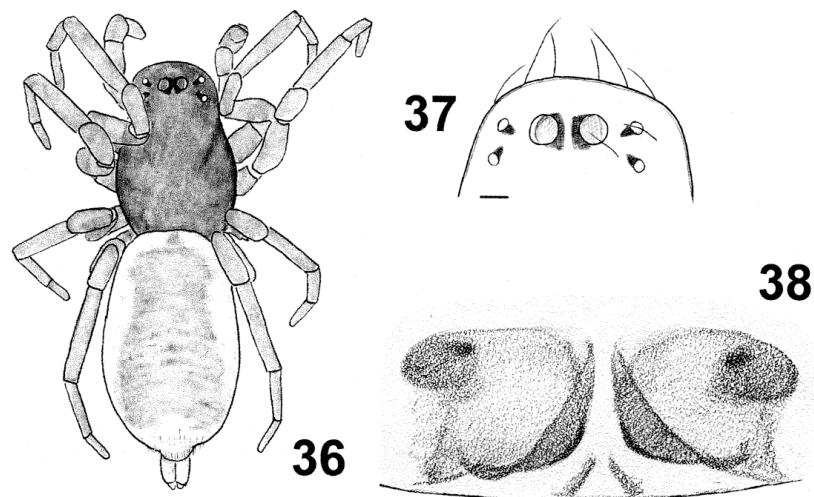
Z. x. Roberts, 1998: 346, fig. (♂♀).

Material examined: 3 ♀♀ (ZMUM), south-eastern Azerbaijan, Lenkoran Dist., environs of Aurora Vill., 38°40'N, 48°52'E, 23–28.04.2001 (YM).

COMMENTS. It is the only species of the genus that penetrates into Neotropics. Lenkoran is the southernmost point of the range in Caucasus.

THERIDIIDAE Sundevall, 1833

So far 55 species of theridiid spiders belonging to 15 genera were known from Caucasus [Mikhailov 1997, 1998, 1999, 2000]. Of them, 47 species and 15 genera were reported from Azerbaijan. Very recently [Guseinov & Rubtsova, 2001; Guseinov, 2002] two more genera new to Caucasus have been reported from Azerbaijan (*Lasaeola* Simon, 1881 (*L. tristis* (Hahn, 1833) and *Paidiscura* Archer 1950 (*P. dromedaria* (Simon, 1880)). The latter species was new to the



Figs. 36–38. *Trygetus jacksoni* sp.n. 36 — body, dorsal view; 37 — cephalic part of carapace, dorsal view; 38 — epigyne, ventral view. Scale = 0.1 mm.

Рис. 36–38. *Trygetus jacksoni* sp.n. 36 — внешний вид; 37 — головной отдел карапакса; 38 — эпигина, вид снизу. Масштаб 0,1 мм.

fauna of the former USSR, and Azerbaijan is the easternmost locality for this species.

Pholcomma Thorell, 1869

Eleven species distributed worldwide are known in this genus [Platnick, 2002]. Judging from its distribution (New Zealand, Argentina, China, Samoa, etc) and the formal diagnosis of this group (presence of abdominal scutum), it seems that this genus is polyphyletic and requires revision. Our record is the first for Azerbaijan and for the whole Caucasus.

Pholcomma gibbum (Westring, 1851)

Pholcomma g. Wiehle, 1937: 218, fig. 275–280 (♂♀).

P. g. Levi, 1957d: 110, fig. 13–18 (♂♀).

P. g. Roberts, 1985: 196, fig. 87a (♂♀).

P. g. Roberts, 1995: 295, fig. (♂♀).

P. g. Roberts, 1998: 309, fig. (♂♀).

Material examined: 1 ♂ 2 ♀♀ (YMT), south-eastern Azerbaijan, Lenkoran Dist., environs of Aurora Vill., 38°40'N, 48°52'E, 23–28.04.2001 (YM); 1 ♀ (CAS), south-eastern Azerbaijan, ca 10 km W of Astara Town, Istisu, 38°27'N, 48°47'E, on the border with Iran, 25.04.2001 (YM).

COMMENTS. This species is known in whole Western Palearctic (from France to Caucasus, from north Africa to south Finland).

Theridiosomatidae Simon, 1881

This is a rather small family with only 12 genera and 72 species distributed worldwide [Platnick, 2002]. Our record of this family is the first for Azerbaijan.

Theridiosoma O. Pickard-Cambridge, 1879

Twenty species have been assigned to this world-spread genus. Two species belonging to *Theridiosoma* are known from the former USSR: *gemmosum* (L. Koch, 1877) (Ukraine, Georgia and Ural), and *epeiroides* Bösenberg & Strand, 1906 (Russian Far East) [Marusik, 1985; Mikhailov, 1997].

Theridiosoma gemmosum (L. Koch, 1877)

Theridiosoma g. Coddington, 1986: 64, fig. 6–9, 134–149, 157–160 (♂♀).

T. g. Roberts, 1995: 298, fig. (♂♀).

T. g. Roberts, 1998: 312, fig. (♂♀).

Material examined: 2 ♂♂ 1 ♀ (ZMUM), south-eastern Azerbaijan, Lenkoran Dist., environs of Aurora Vill., 38°40'N, 48°52'E, deciduous forest litter and small clay canyon in forest, 23–28.04.2001 (YM).

COMMENTS. This species is distributed in western Nearctic, whole Europe (east to Ural) and in Transcaucasia. Records of this species in Lenkoran is the southernmost in Caucasus and in its range.

Zodariidae Thorell, 1881

Twenty-three zodariid species belonging to 3 genera were known to occur in the former USSR [Mikhailov, 2002]. Five *Zodariion* Walckenaer, 1826 species were reported from Caucasus. Four of them were known from Azerbaijan. Below we list one additional genus new to Azerbaijan, Caucasus and the former Soviet Union at whole.

Trygetus Simon, 1882

Only four species were known in this genus until recently [Levy, 1992; Platnick, 2002]. One of them is known from

Morocco, and other three from the Middle East. Our record of a new species extends the known range far to the northeast. Spiders of this genus can be easily separated from all other known zodariids by having only 6 eyes [Jocqué, 1991; Levy, 1992]. Like other known species, *T. jacksoni* sp.n. inhabits semidesert (dry and hot places).

Trygetus jacksoni sp.n.

Figs. 36–38.

Material examined: Holotype ♀ (ZMUM), central-eastern Azerbaijan, Gobustan, Beyuk-Dash Hill, 40°05'N, 49°25'E, under stone in hilly semidesert, 17.05.2001 (R.R. Jackson).

ETYMOLOGY. The species is named after its collector, Robert R. Jackson (Christchurch, New Zealand), famous spider ethologist.

DESCRIPTION. Male unknown.

Female. Body 2.03 long. Carapace: 0.93 long, 0.61 wide, yellow-brown, with 6 eyes (Figs. 36–37), lateral eyes with triangle shaped spots laterally (Fig. 37). Sternum and legs yellow. Chelicerae yellow-brown. Abdomen light colored with wide median violet band formed by thin transverse stripes (Fig. 36). Epigyne as in Fig. 38, pale colored with poorly visible transparent endogina.

Length of leg joints:

	femur	patella	tibia	metatarsus	tarsus
I	0.58	0.27	0.41	0.36	0.29
II	0.47	0.23	0.33	0.36	0.37
III	0.46	0.21	0.33	0.36	0.21
IV	0.60	0.29	0.51	0.51	0.40

DIAGNOSIS. From the genotype (*T. sexoculatus* (O. Pickard-Cambridge, 1872)) it can be easily distinguished by having no abdominal scuta, and from two other Middle East species it can be separated by the abdominal pattern and lack of distinct epigynal pocket [cf. fig. 45 & 50 in Levy [1992].

DISTRIBUTION. Type locality only (Map 1).

Conclusions

Data about new families and genera findings are summarized in Table 1. Seven additional families and 20 genera have been found new to Azerbaijan. Most of the genera (16) and more than half of the families (4) are new to the whole Caucasus. Among the genera, five are new to the former Soviet Union and two (*Myzmenia*, *Tubertia*) are new to Asia as a whole.

Taking our new findings into account, Azerbaijan has become the most family-rich country in the former Soviet Union (44 families or 43 if the probably erroneously reported Cybaeidae are excluded (see "Comment" under *Paracedicus fetti* sp.n.).

Of the 51 families listed in the former Soviet Union [Mikhailov, 2002; Marusik & Koponen, 2000] eight were not found in Azerbaijan (mygalomorphs: Ctenizidae, Dipluridae; araneomorphs: Cithaeronidae, Ctenidae, Cybaeidae, Hersiliidae, Sicariidae and Zoropsidae).

Judging from the distribution of these taxa it is possible to expect some new (additional) family discoveries such as Hersiliidae, Sicariidae and Cithaeronidae known from western Turkmenistan and Iran. The occurrence of Anapidae in Azerbaijan, a new family for the whole former Soviet Union, is also possible. *Comaroma*

simoni Bertkau, 1889, the only European anapid is a deep leaf litter dweller [Kropf, 1998] and this species may occur in Tertiary Lenkoran forests.

Several places in Azerbaijan, seem to be most promising in respect of possible new finds of supraspecific taxa. They are as follows: Apsheron Peninsula, Gobustan, Kura-Araks lowland (arid and semiarid areas) and Lenkoran. These conclusions are based on our previous studies. Our joint trips and many years study by the second author reveal almost no new supraspecific taxa in mountains (alpine and forest belts) and all new family findings came from poorly studied arid areas (Apsheron and adjacent Gobustan) and from relic Tertiary Lenkoran forests. Considering that pitfall-traps were almost never used in Azerbaijan it is possible to expect many additional generic records.

With respect to the discovery of new species, the most promising area would probably be Nakhichevan. For example, of 119 collecting sites in Azerbaijan from where salticids are known [cf. Logunov & Guseinov, 2001] only three are in the Nakhichevan area.

Although geographically Azerbaijan belongs to Asia, from zoogeographical point of view it is more Europe (Mediterranean) than Asia. In general, the spider fauna of Azerbaijan can be considered as transitional between Europe and Asia.

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Table 1. New family and genera records of spiders in Azerbaijan.
Таблица 1. Новые находки семейств и родов пауков в Азербайджане.

Spider taxa	New to Azerbaijan		New to Caucasus		New genera to the ex-USSR	New genera to Asia
	family	genus	family	genus		
Agelenidae						
<i>Lycosoides</i>		1		1	1	
Desidae*	1		1			
<i>Cedicus</i>		1		1		
Filistatidae						
<i>Pritha</i>		1		1		
Gnaphosidae						
<i>Pterotricha</i>		1		1		
Hahnidae						
<i>Cryphoea</i>		1				
<i>Tuberta</i>		1		1	1	1
Leptonetidae*	1					
<i>Leptonetella</i>		1				
Liocranidae						
<i>Mesiotelus</i>		1		1		
Lycosidae						
<i>Evipa</i>		1		1		
<i>Wadicosa</i>		1		1		
Mysmenidae*	1		1			
<i>Mysmena</i>		1		1	1	1
<i>Mysmenella</i>		1		1		
Nesticidae*	1					
<i>Hovaia</i>		1		1		
Oonopidae						
<i>Orchestina</i>		1		1	1	
Palpimanidae*	1		1			
<i>Palpimanus</i>		1		1		
Prodidomidae*	1		1			
<i>Prodidomus</i>		1		1		
Tetragnathidae						
<i>Zygiella</i>		1				
Theridiidae						
<i>Pholcomma</i>		1		1		
Theridiosomatidae*	1					
<i>Theridiosoma</i>		1				
Zodariidae						
<i>Trygetus</i>		1		1	1	
TOTAL	7	20	4	16	5	2

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