

A review of the genus *Phlegra* SIMON, 1876 in the fauna of Russia  
and adjacent countries  
(*Araneae: Salticidae: Aelurillinae*)

DMITRI V. LOGUNOV

Zoological Museum, Institute for Systematics and Ecology of Animals, Siberian Division of the Russian  
Academy of Sciences, Frunze Street 11, Novosibirsk, 630091, Russia.

ABSTRACT. The paper is a revision of the genus *Phlegra* in the fauna of the ex-USSR. Six species, including two new: *Phlegra andreevae* and *P. profuga* are described, distributional maps for each are provided. The lectotype for *Phlegra sogdiana* is designated. New morphological term for the male genitalia, i.e. the compound salticid embolus, is proposed and discussed.

Key words: Arachnology, taxonomy, zoogeography, review, *Phlegra*, *Salticidae*, Palaearctic Region.

INTRODUCTION

Among the members of the subfamily *Aelurillinae*, *Phlegra* represents an easily recognized genus (s. below), which according to PRÓSZYŃSKI (1990) comprises about 50 described species, half of them being known from single sexes only and in need of redescription. Up to now, the genus has not been completely revised which leads to problems in identification of most species.

The current paper presents a critical review of *Phlegra* in the fauna of the ex-USSR (in the limits of 1990 year). I consider the genus in the broad sense, when both the *bresnieri* and *fasciata* species groups are united and considered within *Phlegra* (s. lat.) (SIMON 1903; PRÓSZYŃSKI 1978; ŽABKA 1985; etc.). However, contrary to PRÓSZYŃSKI'S (1990) opinion, the *festivus* species group has been recently defined (LOGUNOV & HEĆIAK 1995) as a separate genus *Asianellus* and hence is not included here into *Phlegra*.

Thus, the goals of the present paper are (1) to redefine the genus *Phlegra* based on both the structure of sex organs and the somatic morphology; (2) to consider apparent affinities of the genus; and (3) to revise all species of the genus found from the territory studied. A total of 6 species are studied, 2 of which are described as new.

#### MATERIAL AND METHODS

The work is based on museum collections and newly collected materials from the former territory of the USSR. A total of 363 specimens of *Phlegra* have been studied.

Specimens for this study were borrowed from or housed in the following museums:

BI - the Zoological Museum of the Institute for Systematics and Ecology of Animals (former Biological Institute), Novosibirsk, Russia;

ZMMU - the Zoological Museum of the Moscow State University, Moscow, Russia;

NMNH - the Museum of Natural History, Paris, France;

IZW - the Institute of Zoology PAN, Warszawa, Poland;

ZIP - the Zoological Institute of Russian Academy of Science, St.Petersburg, Russia;

PSU - the Zoological Department of the Perm State University, Perm, Russia; of

MNH - Museum of Natural History, Wrocław, Poland;

RINS - the Royal Belgian Institute for Natural Science, Bruxelles, Belgium.

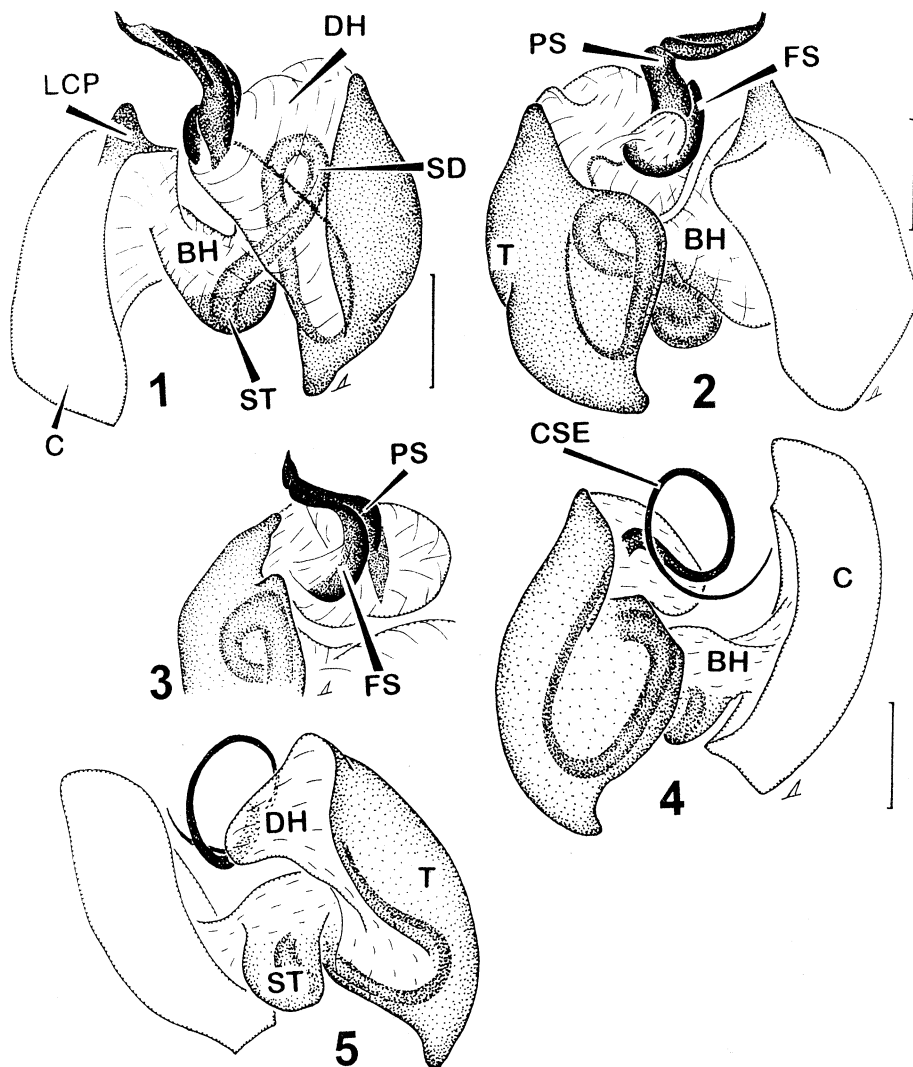
Since this paper is a regional review, not a complete revision of the genus *Phlegra*, relevant literature for each mentioned species includes only sources concerned with the spider fauna of the former USSR and published later than 1936. For complete sources see CHARITONOV (1932, 1936) and PRÓSZYŃSKI (1990).

In most cases the names of collectors are abbreviated as follows: Mr. A. V. ABRAMOV (A.A.); Dr. E. M. ANDREEVA (E.A.), Dr. V. V. DUBATOLOV (V.D.), Dr. P. M. DUNIN (P.D.), Dr. K. Y. ESKOV (K.E.), Mr. A. A. FEODOROV (A.F.), Dr. A. P. KONONENKO (A.K.), Dr. G. T. KUZNETSOV (G.K.); Dr. D. V. LOGUNOV (D.L.), Mr. O. V. LYAKHOV (O.L.), Dr. Y. M. MARUSIK (Y.M.), Dr. K. G. MIKHAILOV (K.M.), Mr. A. B. NENILIN (A.N.); Dr. V. I. OVTSHARENKO (V.O.), Mr. S. V. OVTCHINNIKOV (S.O.), Mrs. T. V. PAVLENKO (T.P.); Dr. M. T. STERNBERGS (M.S.), Dr. V. I. SYTCHEVSKAYA (V.S.); Dr. C. K. TARABAEV (C.T.); Prof. V. P. TYSHCHENKO (V.T.); Mr. E. M. ZHUKOVETS (E.Z.), Mr. V. K. ZINCHENKO (V.Z.), Dr. S. L. ZONSHTAIN (S.Z.), Dr. A. A. ZYUZIN (A.Z.).

Abbreviations used in figures and the text: M - male, F - female, AME - anterior median eyes, ALE - anterior lateral eyes, PLE - posterior lateral eyes, CP - cymbial pocket; BH - basal haematodocha; FS - foot sclerite of the CSE; CSE - compound salticid embolus; DH - distal haematodocha; DTA - dorsal tibial apophysis; EM -

embolic membrane; EP - epigynal pocket; ID - insemination duct; LCP - lateral cymbial process; LTA - lateral tibial apophysis; MS - median septum of epigyne; PS - principal sclerite of the CSE; SD - seminal duct; ST - subtegulum; T - tegulum; Fm. - femur; Pt. - patella; Tb. - tibia; Mt. - metatarsus.

The sequence of leg segments in measurement data is as follows:



1-5. Expanded male palps of *Phlegra* spp.: 1-2 - *P. fasciata*, lateral and median views, 3 - *P. fuscipes*, apical division of bulbus, 4-5 - *P. bresnieri*, median and lateral views. Abbreviations as explained in the text. Scale bars: 1-3 - 0.25 mm, 4-5 - 0.2 mm

femur+patella+tibia+metatarsus+tarsus. All measurements are given in mm. The lengths of spiders in the size classes adopted are those used by DAVIES & ŽABKA (1989): "small", less than 4.0 mm; "medium", 4.0-8.0 mm; "large", more than 8.0 mm.

#### TERMINOLOGY

Most of the terms adopted for genitalic descriptions were proposed by COMSTOCK (1910), WANLESS (1988), ONO (1988), DAVIES & ŽABKA (1989), SIERWALD (1990) and CODDINGTON (1990), most of them shown in figs 1-5, 7, 8, 10, 15, 22. A new term is "compound salticid embolus" (CSE), which in *Phlegra* consists of "principal sclerite" and "foot sclerite" (figs 1-5).

The term "compound salticid embolus" (CSE) is here proposed for use, as the presumption of homology of the *Aelurillinae* embolus and that in some other salticids seems clearly wrong. The current analysis has shown that name "embolus" in *Salticidae* has been used for unequivocally different structures. For instance, the "embolus" in some *Aelurillinae* genera is composed at least of two fused elements (figs 1-3): a "principal sclerite" that appears to be homologous to the simple embolus of some other salticids, and a "foot sclerite" being the likely homolog of the tegular apophysis (sensu GRISWOLD 1987). The composite structure of the aelurilline embolus is seen especially well in some *Phlegra* and *Aelurillus* (e.g. fig. 3). By this means the *Aelurillinae* embolus is treated as homologous to both a simple embolus and tegular apophysis of some another salticids, e.g. from the subfamily *Dendryphantinae*. Consequently, it is safe to say that the term "embolus" in taxonomic descriptions of *Salticidae* is usually used to reflect only its function, not a true sclerite formation. In this paper, as a compromise between homology and stability of names, I have followed CODDINGTON (1990) and included a taxon reference in the name of the sclerite to emphasise the composite origin of "embolus" in some salticids, including *Aelurillinae*.

For the leg spination the system adopted is that used by ONO (1988). Leg spination for the genus reflects only the spine patterns which are present in all its congeners. Names for distributional patterns are those proposed by GORODKOV (1984).

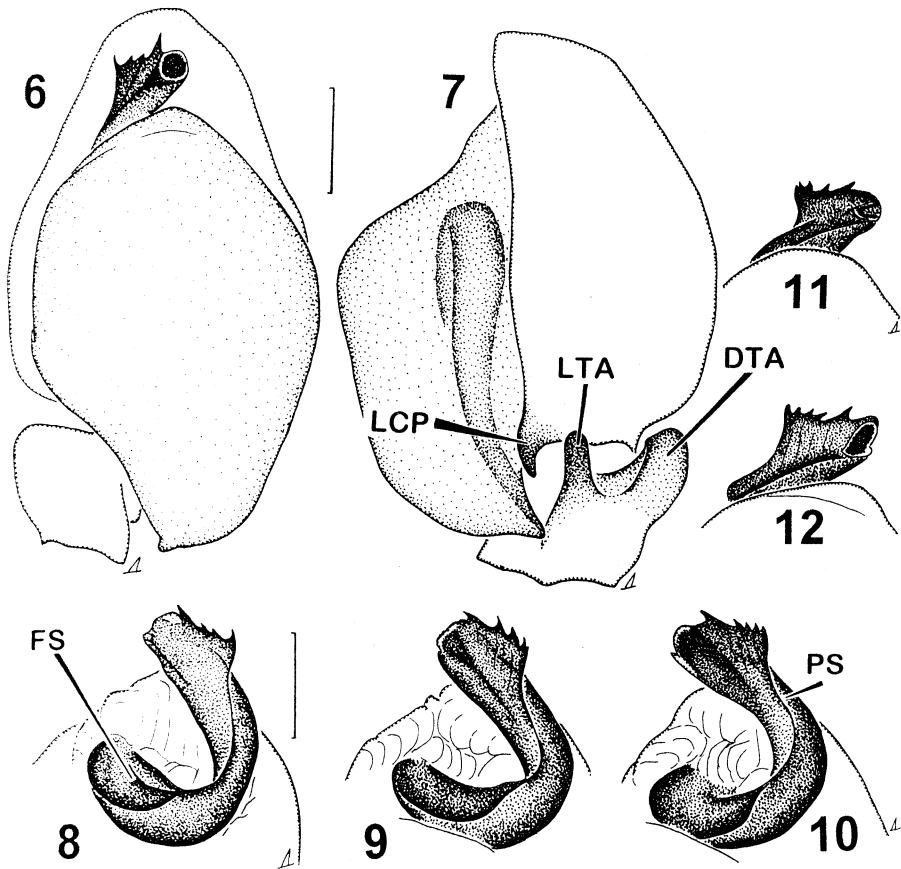
#### *Phlegra* SIMON, 1876

Type species: *Attus fasciata* HAHN, 1826.

#### DEFINITION

Medium to large jumping spiders ranging from about 4.6 to 8.7 mm in length. Sexes alike in general body shape and colour, but males differ in the presence of dorsal abdominal scutum and prolateral spines on tibiae I,II (with pattern 1-2 or 1-1) which are invariably absent in females. Colour pattern, usually consisting of two

white/yellow longitudinal stripes on carapace and pair of brown longitudinal bands on dorsum, present in both sexes, sometimes less distinct in males. CARAPACE: general shape oval and flat; fovea present. EYES: in three rows; posterior row as wide as anterior one or slightly wider; middle row about midway between ALE and PLE; quadrangle length between 29 and 43% of carapace length. CLYPEUS: rather high, sloping down or slightly backwards; height from about 50 to 97% of AME diameter. CHELICERAE: medium; more or less subvertical; promargin with 1 medium tooth that consists of two closely fused teeth; retromargin with 1 small, often not well noticeable, tooth. STERNUM: oval. MAXILLAE: almost square, slightly convergent. LABIUM: subtriangular or oval. PEDICEL: short, usually not visible in dorsal view. ABDOMEN: elongate; 1.5-1.7 longer than wide; scutum



6-12. *P. andreevae*: 6-7 - male palp, ventral and lateral views, 8-10 - the CSE, apical view, 11-12 - ditto, ventral view. Abbreviations as explained in the text. Scale: 0.2 mm

covering about half of dorsum present in males; spinnerets subequal in length, but posteriors thicker than anteriors. LEGS: equally developed; all tarsi with pulvilla (claw tufts, fig. 2H); leg formula IV,III,I,II. LEG SPINATION: patellae III,IV pr., rt. 0-1-0; tibiae I,II pr. 1-2 (in males); tibiae III,IV d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; metatarsi I,II pr. and rt. 1-1ap., v. 2-2ap.; metatarsi III,IV with 6ap. FEMALE PALP: normal, without apical claws. MALE PALP: cymbium simple; cymbium pocket closed; tibia with LTA and DTA (figs 7, 22); CSE hook-shaped, being either massive, heavily sclerotized (figs 8-10), or filamentous (fig. 76); lateral cymbial process often present (figs 1, 7). FEMALE GENITALIA: epigyne usually heavily sclerotized with internal structure visible through integument; copulatory pores paired, large, usually situated within large depressions, separated by median septum (fig. 15); epigynal pocket present; inlet ducts either wide, short and weakly sclerotized, with terminal parts of spermatheca consisting of numerous heavily sclerotized loops closely fused together (figs 14, 25), or tube-chambered (fig. 79).

#### DIAGNOSIS AND AFFINITIES

Members of the genus *Phlegra* are recognized by the following combination of characters: lateral cymbial process present; the CSE hook-shaped, usually heavily sclerotized, with a well-noticeable foot sclerite (figs 1-3)(species of the *bresnieri* group have filamentous CSE); embolic membrane absent; epigyne usually with large paired fossae and median septum (fig. 15); spermathecae usually heavily sclerotized; and metatarsi I and II with lateral spines (1-1ap.).

The structure of the genitalia suggests a relationship of *Phlegra* with the genus *Aelurillus*, but it is also clear that diversity, in respect of both habitus and genitalic structure, is considerable. Including the members of the *festivus* species group in the genus *Phlegra* (e.g. HARM 1977; YIN & WANG 1979; PAIK 1985; PRÓSZYŃSKI 1990; PENG et al. 1993 etc.) was shown to be ungrounded. For more details see LOGUNOV & HEĆIAK (in press).

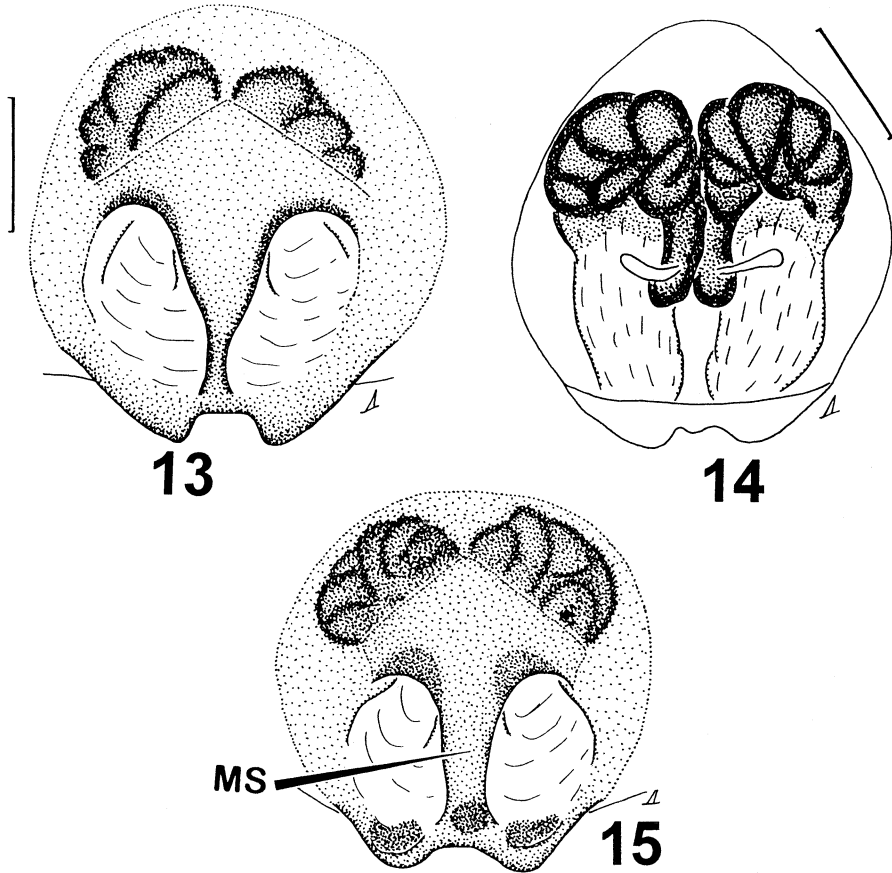
It can be seen that *Phlegra* and *Aelurillus* have the same, most probably primitive, structure of the CSE (masive and hook-shaped) and appear to be closely related. However, no distinctive synapomorphy linking *Phlegra* to *Aelurillus* could be currently found, especially if taking into account the epigynal and spermathecal structures (cf. also WEISS 1979).

#### DISTRIBUTION

The majority of species are recorded from the Ethiopian and Oriental Regions. In the Palaearctic Region it is distributed mainly in the Mediterranean, the Middle East and Middle Asia, with the centre of diversity in the Mediterranean Region. The only species found in the Nearctic Region is *Phlegra fasciata* (RICHMAN & CUTLER 1978).

## REMARKS

The members of *Phlegra* usually have a great range of variation in genital structure, which may lead to incorrect determination of species. In some cases it is difficult to assign specimens to a single or two species. A similar situation for salticid spiders has been shown by CUTLER (1979) and GALIANO (1963) for *Metaphidippus insignis* (BANKS) and *Euophrys sutrix* HOLMBERG, respectively. Two cases can be mentioned here:



13-15. *P. andreevae*: 13, 15 - epigyne, 14 - spermathecae. Abbreviations as explained in the text. Scale bar: 0.2 mm

(1) *P. andreevae* demonstrates a considerable variation in the number of teeth on the serrated tip of the CSE in males (figs 8-12) and in the shape and length of the median septum of the epigyne and the structure of the female spermatheca (figs 13, 15). As a result, most females of this species cannot be definitely separated from

those of *P. profuga* (fig. 49), which also show a great variation of female genitalia. Therefore, to discriminate between these species, males are required.

(2) There are two distinct forms, presumably, of *P. sogdiana* (designated here forms A and B) in the collections studied (cf. figs 57-66 and 67-72). Of them, form B (figs 67-72) is difficult assign to either *P. andreevae* or *P. sogdiana*, as it shares the genitalic and somatic characters of both species. Thus, males have the palpal femora and patellae covered with white hairs like in the former species, while the embolic structure is similar to that of the latter one (figs 8-12). Females have the pronounced median septum as in the first species, while the fossae are noticeable divided into two sections as in the second one, and so on. At present, it is not clear how to deal with the variability of *P. sogdiana* or *P. andreevae*. Taking into account that all known localities of these specimens are restricted by a zone of the partially overlapping ranges of both species (figs 16, 73), it seems to be safe to accept that these specimens are hybrids between the debated species. Consequently, the zone of the overlapping of ranges of both species may be treated as semisympatric (sensu PANOV 1989).

Both mentioned examples are similar in that we apparently deal with semi-species (sensu MAYR 1940, cited after PANOV 1989). However, as nothing is known about kind of hybridization (limited or introgressive) between them, it is not possible to determine this for certain. Laboratory experiments on natural hybridization between both pairs of species, including ethological studies, are necessary to accept or reject the above suggestion. But even if they turn out to be semi-species, they will retain their taxonomic status as Linnean species.

#### NATURAL HISTORY

*Phlegra* is a typically terrestrial salticid, and can be found in open sunny places under stones, and more seldom, on bare ground with low vegetation or without it. The usual habitats in Siberia, where the members of *Phlegra* occur, are sloping shrub-stony steppes (LOGUNOV 1992).

#### SURVEY OF SPECIES

### **The *fasciata* species group**

Members of this group are characterized by the following characters: lateral cymbial process present (figs 7, 18, 29); the CSE usually heavily sclerotized, with a well-noticeable foot sclerite (figs 8-10, 51-55); epigyne with a median septum (figs 15, 40, 63) and spermathecae usually heavily sclerotized (chambered type), with wide and short inlet ducts (figs 14, 25, 64).



***Phlegra andreevae* sp.n.**

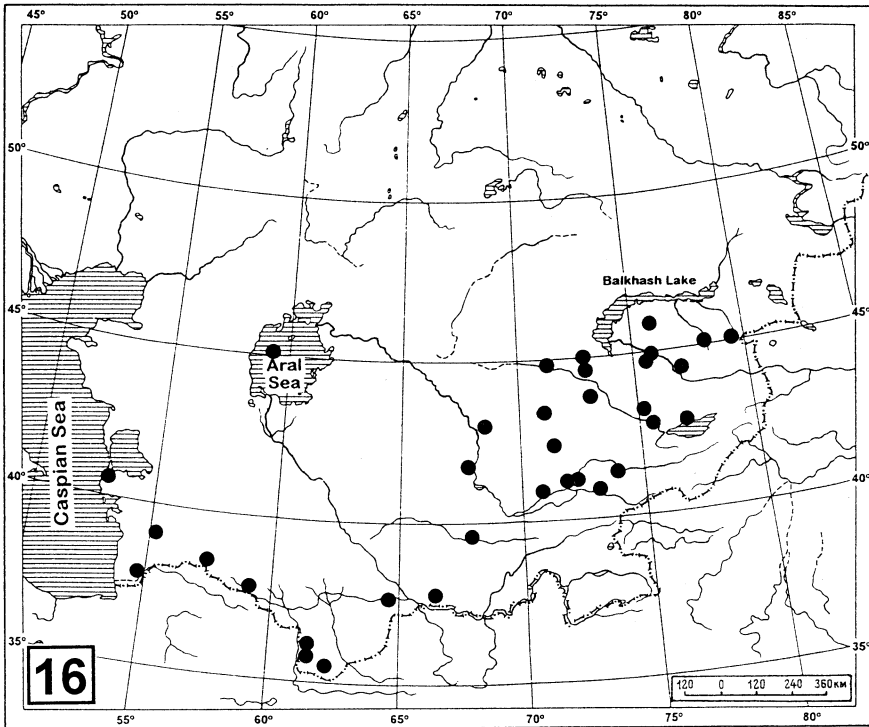
(figs 6-16)

*Phlegra sogdiana*: NENILIN 1984b: 140; Ibid. 1985 (in part): 130; PAVLENKO 1985: 150; SAVELJEVA 1990: 173.

**MATERIAL**

Holotype: 1 M from Kazakhstan (type locality): Alma-Ata Area, Tchilik Distr., highway to Narynkol, Sogety Mts., Kokpek canyon, 28-29.V.1988 (C.T., ZMMU, Ta-4758).

Paratypes: KAZAKHSTAN. Alma-Ata Area: together with holotype (ZMMU, Ta-4759), 1 F; Kurtinsk Distr., environs of St. Aidarly, July 1989 (A.Z., BI, 1143), 1 F; same locality, Kurty, VII.1989 (A.Z., ZMMU, Ta-4764), 1 F; mountains N of Otar, 11.V.1988 (C.T., ZMMU, Ta-4761), 1 F; Talgarskij Distr., 17-18 km E of Kaptchagai, 27.VIII.1992 (D.L. & Y.M., BI, 1331), 4 M, 5 F; Kaptchagai, 15.05.1984 (coll.?, ZMMU, Ta-4765), 3 F; Balkhash Distr., 24 km SE of Bakanas, 28.V.1995

16. Distribution of *P. andreevae*

(A.Z., MNH), 3 M, 3 F; Kyzyl-Kum Desert, 14-18.V.1995 (NNH), 1 F. Semipalatinsk Area: Makantchi, Dz Haitobe Mts., 9.IX.1990 (A.F. & A.Z., ZMMU, Ta-4669), 1 M. Aral Sea: Barsakel'mes Island, Aizi-Sai, 16.VII.1984 (N. Derbina, ZIP), 1 F; same locality, 23.V.1982 (T.P., ZIP), 1M; same locality, 14-17.VI.1984 (T.P., ZIP), 3 F. Mangistauzskaya Area: Mangyshlak Peninsula, Aktau [SHEVTCHENKO], 22.VI.1967 (G. Nikolayev, IZW), 1 F; Ustyurt Plateau, Ustyurt Reserve, Baskorgan shepherd's stand, 26-27.V.1989 (A.A. RAYKHANOV & S.I. IBRAEV, BI, 1150), 1 M, 4 F, (A.A. RAYKHANOV & S.I. IBRAEV, ZIP), 1 M, 2 F; same locality, Saksorkuyu and Kendirli winter stays, 17-21.V.1989 (A.Z., BI, 1152), 4 F. Dzhambul Area: Talasskij Distr., 21 km of road Akkol'-Ulanbel', 15.V.1991 (S.I. IBRAEV & A.Z., BI, 1139), 2 M, 5 F; Georgievka, 22.05.1984 (S.O., ZMMU, Ta-4763), 1 F; Kindiktas Mts., Kurdaj Pass, 17.06.1983 (S.Z. & S.O., ZMMU, Ta-4773), 1 F; Krasnogorskij Distr., 17 km NW of Kenen, Kindiktas Mts., 14-15.VI.1990 (A.Z., MNH), 2 F; Moynkum Distr., 17 km E of Khantau, foot of Sunkar Mountain, 12.VI.1990 (A.F. & A.Z., ZMMU, Ta-4762), 1 F; 21 km S of Furmanovka, 15-16.V.1992 (A.F. & A.Z., BI, 1332), 1 M, 2 F; 21 km NW of Akbakai, Betpak-Dala Desert, Baikara Mountain, 7-8.06.1990 (A.F. & A.Z., IZW), 1 M, 1 F; 124 km of highway Akkol'-Ulanbel', Moynkum Desert, 16-17.V.1990 (A.F. & A.Z., ZMMU, Ta-4774), 1 F; 61 km of road Mirnyi-Khantau, 8-9.VI.1990 (A.Z., BI, 1146), 2 F; 6 km SE of Khantau, Khantau Mt Range, 23.V.1991 (A.Z., BI, 1147,1166), 2 M, 2 F. South-Kazakhstan [Chimkent] Area: Karatau Mt Range, 25 km W of Chulakkurgan, near Abai, 25.VI.1989 (A.Z., ZMMU, Ta-4775), 1 F; Kyzylkum Desert, Karamola Mt, 14-18.V.1995 (A.Z., MNH), 1 F. Taldykorgan [Taldy-Kurgan] Area: 63 km of road Ushtobe-Akzhar, Irnazar triangulation spot, summer 1989 (A.Z., ZMMU, Ta-4776), 1 F; Panfilovskij Distr., 2-3 km SW of Konyrolen, Katutau Mountains, 8.V.1992 (A.F. & A.Z., ZIP), 1 F. - UZBEKISTAN. Surkhandarja Area: Sherabad Distr., Kamyrtapa, 1500 m a.s.l., 16.V.1984 (A. A. TANASEVITCH, ZMMU, Ta-4169), 1 F; Zeravshanskij Mt Range, Kitun river, 23.05.1967 (LOPATIN & TCHIKATUNOV, IZW), 1 F; same range, near Sudzhino, 17.05.1967 (LOPATIN & TCHIKATUNOV, IZW), 1 M. Samarkand Area: Bukantau Mt Range, Irlir Mt, Karakuduk, 9.V.1976 (A.K., BI, 1141), 1 F. - TURKMENISTAN. SW Kopetdagh Mts: Aidere canyon, 1000 m a.s.l., 30.IV.1985 (S.Z., ZMMU, Ta-4766), 1 M; Ipaitala, 20.V.1984 (V. Y. FET, BI, 1164), 1 M; environs of Garry-Galy [Kara-Kala], 28-29.III.1993 (D.L., BI, 1776), 1 M; same locality, 4.V.1987, (A.Z., BI, 1168), 1 M, 1 F. Karakumy Desert: Kelif, 21.IV.1976 (A.K., BI, 1145), 1 F. Kopetdagh Mts: Firyuza, 1.V.1991 (V.D., BI, 1412), 1 M; 10 km SE of Bakharden, 3-4.IV.1993 (D.L., BI), 2 F. SE Kopetdagh Mts: 40 km SE of Polekhatum, Zul'fagarskij Mt Range, 1000 m a.s.l., 13-14.IV.1993 (D.L., BI, 1773), 2 F; 20-25 km SE of Polekhatum, Gezgyadyk Mt Range, 1000-1100 m a.s.l., 15-16.04.1993 (D.L., BI, 1775), 2 M. - KYRGHYZSTAN. Dzhahal-Abad Area: Dzhahal-Abad environs, 30.V.1984 (S.Z., ZMMU, Ta-4668), 1 M, 1 F; Ferganskij Mt Range, Arslanbob, 22-25.X.1986 (S.Z., ZMMU, Ta-4668), 1 F; Dzhany-Dzhal'skij Distr., 2 km N of Tash-Kumyr, 14-15.06.1992 (A.F. & A.Z., ZMMU, Ta-4777), 1 F; (A.F. & A.Z., ZIP), 3 F; same district, 5 km SW of Kyzyl-

Dzhar, 22.VI.1992 (A.F. & A.Z., ZMMU, Ta-4778), 5 F; (A.F. & A.Z., BI, 1342), 1 M; same district, Sarykamysh-Sai Spring, 6.09.1985 (D.L., ZMMU, Ta-4770), 3 F. Talas Area: Toktogul'skij Distr., 25 km NE Kara-Kul', Kok-Bel' Pass, 1500 m a.s.l., 27-28.VI.1992 (A.F. & A.Z., NMNH), 1 M, 2 F. Issyk-Kul' Area: Issyk-Kul' Lake, Cholpon-Ata, 9.VIII.1977 (S.Z., ZMMU, Ta-4671), 1 F. Bishkek [Frunze] environs: Kirgizskiy Mt Range, Suzakskie Adyry, 10.IV.1982 (S.Z., ZMMU, Ta-4670), 1 F. Area unknown: Baubashata Mt Range, Tcharvak natural limits, 3.VII.1981 (S.Z., BI, 1167), 1 M; same range, Zindan natural limits, 11.VIII.1981 (S.Z., ZIP), 1 F. - TAJIKISTAN. Kulyab Area: Pyandzhinskij Distr., 7 km S of Zebon, 10.IX.1989 (A.Z., BI, 1353), 1 F.

#### DIAGNOSIS

The species is closely related to *P. profuga*, but males can be recognized by the shorter serrated embolus (figs 11, 12) and lighter coloration. Females are practically indistinguishable due to the strong variation of genitalia in both species. The only discriminating character is a slightly shorter septum of the epigyne (cf. figs 15 and 49) and lighter coloration. There is also geographic clustering evident between these species. *P. andreevae* has been collected from Middle Asia (fig. 16), while *P. profuga* has been taken from Tuva, North Kazakhstan and the Osh Area of Kyrgyzstan (fig. 56).

#### DISTRIBUTION

Currently, the species has a Middle Asian subboreal distributional pattern (fig. 15).

#### DESCRIPTION

MALE. Measurements. Carapace 2.32-3.00 long, 1.55-1.93 wide, 0.85-1.18 high at PLE. Ocular area 0.98 long, 1.13- 1.30 wide anteriorly and 1.13-1.31 wide posteriorly. Diameter AME 0.38-0.40. Abdomen 2.25-3.38 long, 1.50-2.05 wide. Clypeal height 0.15-0.25. Cheliceral length 0.65-0.83. Length of leg segments: leg I- 1.10-1.55+0.70-0.93+0.68-0.93+0.48-0.63+0.48-0.60; leg II- 1.10-1.45+0.60-0.85+0.63-0.78+0.45-0.55+0.48-0.60; leg III- 1.30-1.65+0.63-0.83+0.70-0.93+0.80-1.00+0.53-0.70; leg IV- 1.55-2.03+0.67-0.98+1.10-1.42+1.14-1.63+0.63-0.75. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. pr. 1-2, v. 1-1-2ap.; Mt. v. 2-2. Leg II: Fm. 0-1-1-3; Tb. v. 1-2ap.; Mt. v. 2-2. Leg III: Fm. d. 1-3-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 1-1-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-0, pr. and rt. 1-1-2ap., v. 1-2ap. Coloration. Carapace brown, with two dorsal bands of white hairs. Sides of carapace covered with black hairs. Eye field black, covered with orange-grey or grey-brown hairs. Clypeus brown, densely covered with white hairs. Sternum, maxillae and labium yellow-brown to brown. Chelicerae dark brown. Abdomen yellow-grey, with a pair of dorsal longitudinal dark brown stripes. Dorsum with small scutum. Spinnerets brown. All legs yellow-brown to dark brown; tibiae and patellae sometimes darker than other segments. Palp with dorsal bunch of white hairs on tibia and patella. Palpal structure as in figs 6-10.

**FEMALE.** Measurements. Carapace 3.28-3.90 long, 2.18-2.58 wide, 1.50 high at PLE. Ocular area 1.10-1.30 long, 1.45-1.68 wide anteriorly and 1.50-1.75 wide posteriorly. Diameter AME 0.45-0.48. Abdomen 4.00-4.50 long, 2.60-3.00 wide. Clypeal height 0.28-0.31. Cheliceral length 1.00-1.38. Length of leg segments: leg I- 1.532.05+0.90-1.15+0.90-1.13+0.63-0.75+0.53-0.65; leg II- 1.48-1.50+0.85-0.95+0.80-0.88+0.61-0.65+0.58-0.60; leg III- 1.73-2.03+0.931.08+0.90-1.08+1.05-1.30+0.73-0.75; leg IV- 2.20-2.55+1.10-1.30+ 1.58-1.90+1.83-2.13+0.78-0.90. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0; pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 1-1-2; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. 1-1-2ap., rt. 1-1-1-2ap., v. 2-2ap. Coloration similar to that of males except as follows: all legs light brown-yellow with numerous brown rings and patches. Epigyne and spermatheca as in figs 13-15.

#### ETYMOLOGY

The species is gladly named after Dr. Ekaterina M. ANDREEVA (Poland), a well-known specialist on the spider fauna of Tajikistan.

### *Phlegra fasciata* (HAHN, 1826)

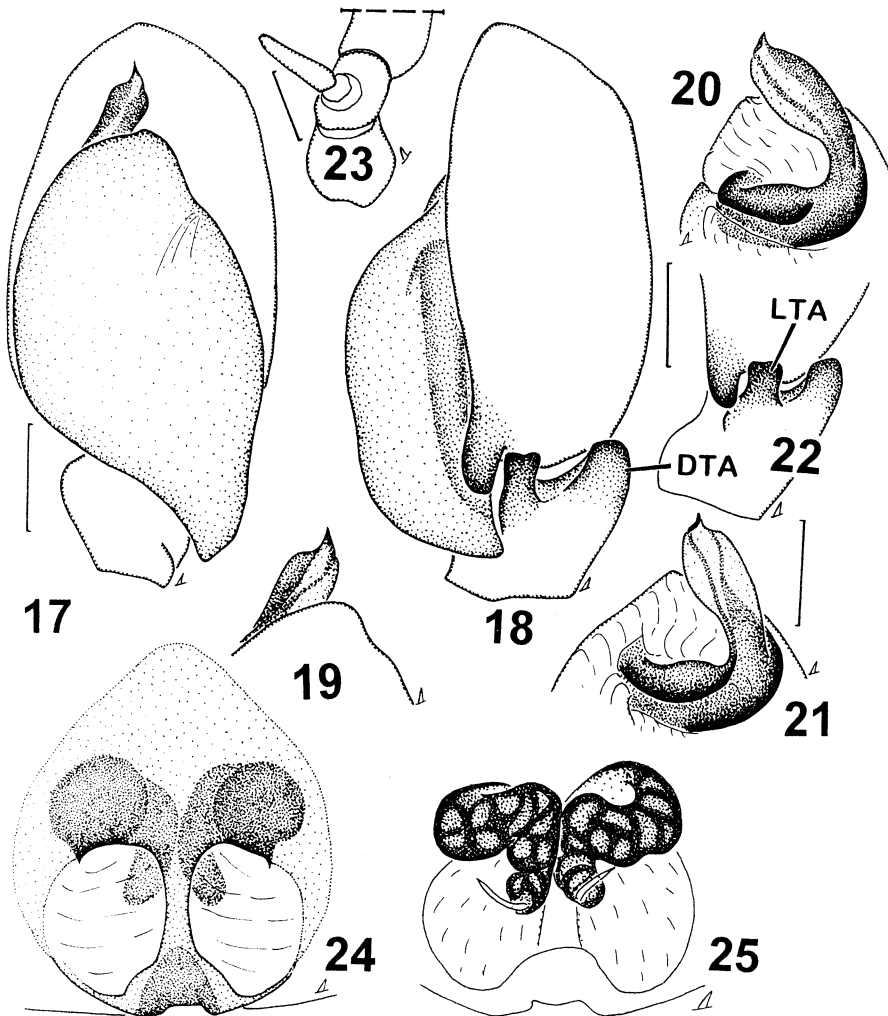
(figs 1, 2, 17-26)

*Phlegra fasciata*: SPASSKY 1937: 138; AZHEGANOVA 1951: 144; Ibid. 1968: 141, figs 359,361; VILBASTE 1969: 202-204, figs 170,171; SAVELJEVA 1970: 85; Ibid. 1979: 142; TYSHCHENKO 1971: 81; SHTERNBERGS 1974: 66; OVTSHARENKO 1978: 683; PRÓSZYŃSKI 1979: 315; POLOZHENTSEV & AKIMTSEVA 1980: 450; PICHKA & SKUFJIN 1981: 12; FET 1983: 843; MINORANSKIJ et al. 1977: 101; MINORANSKIJ & PONOMARJOV 1984: 90; NENILIN 1984a: 25; Ibid. 1984b: 140; Ibid. 1985: 130; DUNIN 1988: 38; LEGOTAI 1988: 19; POLTCHANINOVA 1988: 44; Ibid. 1990: 99; IZMAILOVA 1989: 161, fig 162.

#### MATERIAL

BYELORUSSIA. Minsk Area: Stolbtsovski Distr., N.Sverzhen', 24.V.1979 (E.Z., BI), 1 M. Brest Area: Ivatsevichski Distr., Panki, 8-18.VII.1985 (E.Z., BI), 1 M. - RUSSIA. Rostov Area: Novotcherkassk, 20.05.1916 (S. SPASSKY, ZIP), 3 M. Stavropol Province: Kabardino-Balkaria ASSR, Tcheget, 1.VII.1976 (V.O., ZIP), 3 F. Mari-el [Mariyskaya ASSR]: Yaltchik, 27.VI.1988 (Matveev, BI), 1 M. Chelyabinsk Area: Troitsk Distr., Troitsky Reserve, 28.VI.1987 (S. L. ESYUNIN, PSU), 1 M, 3 F. Primore: Furugelm's Island, 18.VII.1975, (M.S., BI, 527), 1 M. - GEORGIA. Lagodekhi: 22.VI.1982 (Y.M., ZIP), 1 F. - AZERBAIJAN. Vartashen: 15.VII.1984 (P.D., BI), 1 M; Baku environs, 1.V.1977, (P.D., MNH), 1 F. - KAZAKHSTAN. North-Kazakhstan Area: Sokolovskij Distr., Bol'shaya Malyska, 12-18.VI.1986 (D.L., ZMMU), 1 M. Karaganda Area: Kent Mts., 22.VI.1957 (V.T., ZIP), 1 F. Alma-Ata Area: Alma-Ata [Almaty] environs, 6.V.1992 (A. V. GROMOV, BI), 1 F. South-Kazakhstan [Chimkent] Area: 20 km E of Suzak, 26.VI.1989 (A.Z., BI, 525), 1 M. Mangistauzskaya Area: Kuibyshevo, 19.V.1985 (S. DERYUGIN, BI, 526), 2 F.

Taldy-Kurgan Area: 15-20 km SE of Kopal, pass 3200 m a.s.l., 21.VI.1993 (V.D., BI), 1 F. - KYRGHYZSTAN, Bishkek [Frunze] environs: Fergansky Mt Range, Kara-Alma natural limits, 6.VI.1979 (S.Z., ZIP), 1 M, 2 F; northern slope of Kirgizskij Range, Uzun-Bulak natural limits, June 1983 (S.O., ZIP), 1 F; same



17-25. *P. fasciata*: 17-18 - male palp, ventral and lateral views, 19 - the CSE, in ventral view, 20-21 - ditto, in apical view, 22 - lateral cymbial process and tibial apophysis in male palp, 23 - unusual process on male coxa I, 24 - epigyne, 25 - spermathecae. Abbreviations as explained in the text. Scale bars: 17-22, 24-25 - 0.2 mm;

23 - 0.5 mm

range, 20 km S of Bishkek [Frunze], Malinovoye Canyon, 28.VII.1984 (S.O., BI, 1163), 1 F; same locality, 1500 m a.s.l., 1.07.1983 (S.O., ZIP), 1 F; Suusamyrtoo Range, Kokomerren, 6.06.1986 (S.O., ZMMU), 1 M; same range, 3-8 km SW of Kyzyl-Oi, Valley of Kobuksu (=Kovyuksu) River, 23-27.07.1993 (D. A. MILKO, MNH), 1 M. Issyk-Kul' Area: Issyk-Kul' Lake, Dolinka, 16-26.06.1980 (S.Z., ZIP), 1 M, 1 F. Dzhahal-Abad Area: Tchilisaj Canyon, 30.VI.1985 (A.Z., ZMMU), 1 M; same area, Karasuisky Distr., Papan, 22-23.VI.1985 (A.Z., BI, 1161), 1 M. - TURKMENISTAN. SW Kopetdagh Mts: 3-9.VII.1982 (N. USTINOVA, ZIP), 1 F. - TAJIKISTAN. Khobu-Rabot Pass, 2200-3400 m a.s.l., 28.V.1970 (E.A., IZW), 1 F.

#### COMPARATIVE MATERIAL

BULGARIA: "g. Katun ad Petric", 6.05.1966 (V. BESKOV & W. STARĘGA, IZW), 4 M.

#### DIAGNOSIS

The species is similar to *P. fuscipes*, but the DTA and the embolic tip are not sharpened (cf. figs 18 and 28) and the epyginal pocket is wider (figs 24, 40).

#### DISTRIBUTION

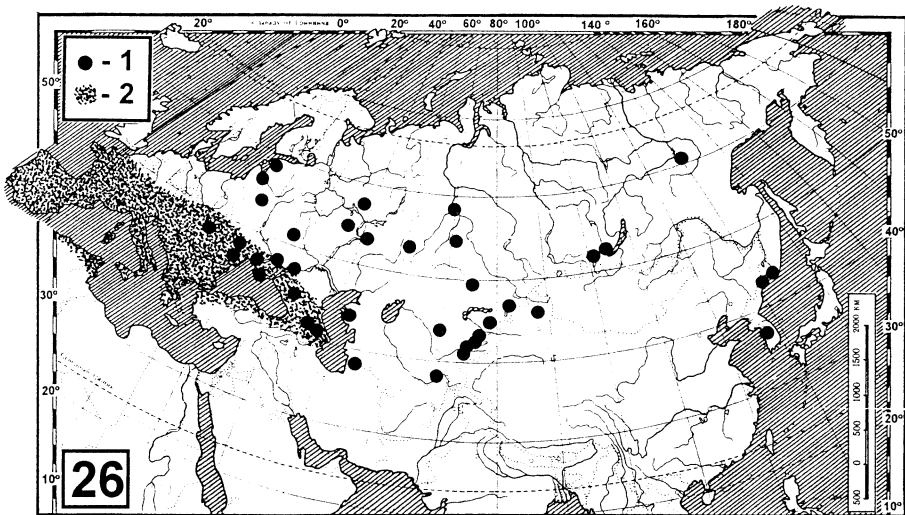
This is apparently a Holarctic temperate (circumtemperate) species. Its occurrence in North America, to my mind, should be confirmed by pertinent materials, as according to RICHMAN (1982) the North American males of this species have turquoise-blue clypeal cover, while those from Siberia have an orange one. Analogous dissimilarities in some other salticids, e.g. *Euophrys*, are known to reflect species differences.

#### DESCRIPTION

MALE. Measurements. Carapace 2.65-3.10 long, 1.78-2.05 wide, 1.00-1.13 high at PLE. Ocular area 0.83-1.05 long, 1.20-1.43 wide anteriorly and 1.25-1.45 wide posteriorly. Diameter AME 0.35-0.39. Abdomen 2.75-3.00 long, 1.75-1.95 wide. Clypeal height 0.25-0.28. Cheliceral length 0.78-0.93. Length of leg segments: leg I- 1.30-1.48+0.78-0.95+0.83-0.88+0.58-0.63+0.53-0.58; leg II- 1.25-1.40+0.73-0.83+0.69-0.80+0.60+0.53; leg III- 1.551.58+0.73-0.88+0.80-0.90+1.05-1.08+0.63; leg IV- 1.93-2.05+0.850.90+1.25-1.28+1.48-1.58+ 0.75-0.78. Leg spination. Leg I: Fm. d. 0-1-1-4 or 0-1-1-3; Tb. pr. 1-1, v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-4; Tb. pr. 1-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-3-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 0-1-0, pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 1-1-1-1, rt. 1-1-1, v. 1-2ap.; Mt. d. 0-1, pr. 1-1-1, rt. 2-1-2ap., v. 1-1-2ap. Coloration. Carapace orange with wide longitudinal brown band, covered with black hairs. Eye field usually black. Clypeus orange, covered with brown hairs resembling thin bristles. Sternum, labium, maxillae and chelicerae yellow. Abdomen: dorsum dark-grey with inconspicuous yellow lines on sides; venter yellowish. Dorsal scutum

about half length of abdomen. Book-lung covers yellow. Spinnerets grey. Legs: coxae yellow, femora orange, other segments orange-brown. Palp brown-yellowish, its structure as in figs 1, 2, 17-23.

**FEMALE.** Measurements. Carapace 2.98-3.13 long, 2.00-2.18 wide, 1.08-1.25 high at PLE. Ocular area 1.05-1.15 long, 1.43-1.50 wide anteriorly and 1.50-1.59 wide posteriorly. Diameter AME 0.40- 0.43. Abdomen 3.75-5.00 long, 2.25-3.20 wide. Clypeal height 0.20- 0.25. Cheliceral length 0.73-1.00. Length of leg segments: leg I- 1.30-1.43+0.85-0.88+0.75-0.88+0.53-0.55+0.45-0.55; leg II- 1.33-1.53+ 0.88+0.68-0.88+0.52-0.60+0.50-0.53; leg III- 1.60-1.80+0.73-0.90+ 0.85-0.93+1.05-1.13+0.58-0.65; leg IV- 1.98-2.30+0.88-1.00+1.40-1.53+1.65-1.70+0.73-0.75. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. pr. 0-1, v. 2-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-2-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 0-1-1-2; Pt. pr. and rt. 0-1-0; tib. d. 1-0, pr. and rt. 1-1-1, v. 1-1-2ap.; Mt. d. 1-0, pr. and rt. 1-1-2ap., v. 1-2ap. Coloration. Carapace brown with a pair of longitudinal yellow stripes. Eye field usually black. Clypeus yellow. Sternum yellow. Maxillae and labium brownish with yellow tips. Chelicerae brown. Abdomen: colour as in male, without scutum. Book-lung covers yellow. Spinnerets grey. Legs: coxae yellow, femur half yellow, half brown, other segments brown with yellow spots. Epigyne and spermatheca as in figs 24, 25.



26. Distribution of *Phlegra* spp.: 1 - *P. fasciata* in the USSR and Asian countries, 2 - *P. bresnieri*

***Phlegra fuscipes* KULCZYŃSKI in CHYZER et KULCZYŃSKI, 1891**

(figs 3, 27-48)

*Phlegra fuscipes*: SPASSKY & SHNITNIKOV 1937: 295; TYSHCHENKO 1971: 81; ASTAKHOVA 1974: 95; PRÓSZYŃSKI 1976: fig 328, map 20; Ibid. 1979: 315-316, figs 260-267; MINORANSKIJ et al. 1977: 101; SAVELJEVA 1979: 144; Ibid. 1990: 173; ASHIKBAYEV 1980: 20; NENILIN 1984a: 25; Ibid. 1984b: 140; Ibid. 1985: 137; DUNIN 1988: 38; DANILOV 1989: 168; KRASNOBAJEV 1990: 86; LOGUNOV 1992: 64; KOPONEN & MARUSIK 1992: 166; DANILOV & LOGUNOV 1993: 35.

*Phlegra cinereofasciata*: SAVELJEVA 1970: 85; Ibid. 1974: 52; DUNIN 1979: 36; Ibid. 1984: 58.

## MATERIAL

Form A (*P. cinereofasciata*): ARMENIA. Sevan: 2000 m a.s.l., 28.VII.1983 (D.L. & V.O., BI), 3 F. - AZERBAIJAN. Kazakh Distr.: bank of Akstafachai River, 29.V.1981 (A.Z., BI, 1169), 1 M. Lerik Distr.: Gaftoni, 20.VI.1985 (P.D., BI), 1 F; Dyugyakh, 3.VII.1985 (P.D., BI), 1 M, 1 F; (P.D., BI), Kelokhan, 13.V.1985, 2 F; Kyalvaz, 1600 m a.s.l., 13.V.1985 (P.D., BI), 1 F. Shemakha Distr.: Gokhmukh, 27.VI.1977 (P.D., BI), 1 M. Apsheron peninsula: Baku, Yasamal'skaya Valley, 1.V.1977 1 F (P.D., ZMMU), 1 F (P.D., BI). Nakhitchevan': Shakhyauszkiy Distr., Kel'tsor, 1500 m a.s.l., 9.VII.1988 (P.D., BI), 1 F. - KAZAKHSTAN. Almaty (=Alma-Ata) area: Djambul Distr., Georgievka, 13.V.1991 (S. I. IBRAEV & A.Z., BI), 1 F. - KYRGHYZSTAN. South slope of Terskey Ala-Too Mt Range, valley of Sary-Dzhaz river, Bolshoi Berkut natural limits, 3200 m a.s.l., 18-19.VII.1993 (D. A. Milko, BI), 1 M; Kaindy Mt Range, Dzhilybulak natural limits, 3000 m a.s.l., 17.VII.1983 (S.O., ZIP) 1 M, 1 F, (S.O., BI) 1 F.

Form B (true *P. fuscipes*): RUSSIA. Khakassia: Askiz Distr., 25-27 km NE of Askiz, hill near Abakan river, 15.07.1990 (D.L., BI, 531), 2 M, 5 F; 8 km E of Biriktchul', 1100 m a.s.l., 16-18.VII.1990 (D.L., ZMMU), 1 M, 3 F. Tuva: Ovyurskiy Distr., 13-15 km N of Khandagaity, 25.VII.1993 (D.L., BI), 1 M. Chita Area: 3-5 km E of Kyra Vill., 18.VI.1991, (D.L., MNH), 2 F. - KAZAKHSTAN. West-Kazakhstan [Uralskaya] Area: Dzhanybek, 25.VIII.1982 (K.M., ZMMU), 4 M, 1 F; same locality, 20.VIII-7.IX.1984 (K.M., ZMMU), 2 M. Turgaj Area: Arkalyk Distr., Mt Kokshetau, right bank of Tersakkan River, 16-24.06.1957 (V.T., ZIP), 3 M, 3 F. Pavlodar Area: Bayanaul'sky Distr., Babaly Mountain, 27.VIII.1990 (O.L., BI), 1 F; same area, Maisky Distr., south border of the Beistausky Cupola, 26.VIII.1990 (O.L., BI), 1 M. East-Kazakhstan Area: Zaisan Distr., Saur Mt Range, Karaungur River, 18-22.VI.1990 (K.E., MNH), 1 M.

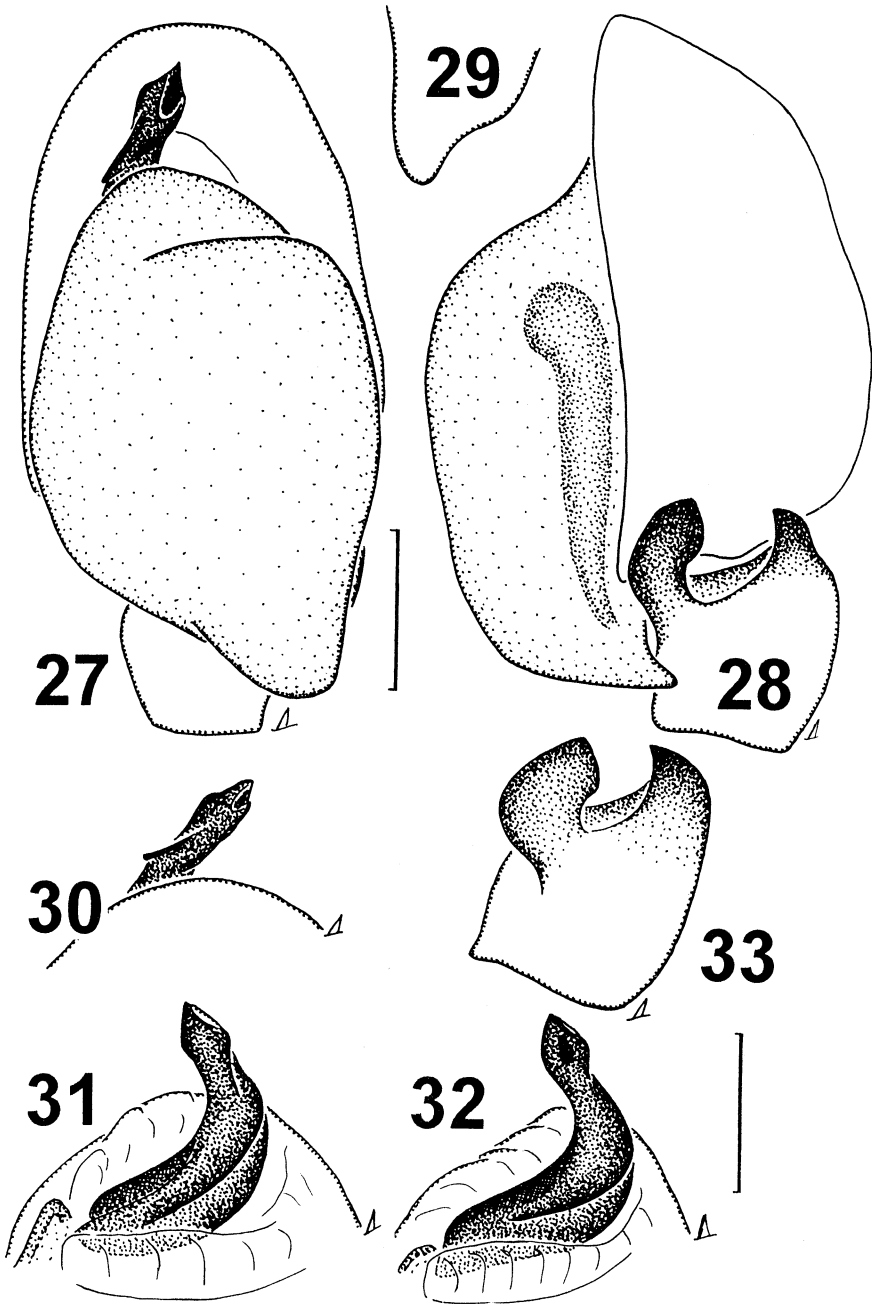
## DIAGNOSIS

This species is closely related to *P. fasciata*, but can be separated by the sharpened DTA and embolic tip (figs 28, 30-33) in males and scarcely pronounced epigynal pocket (figs 40, 44, 46) in females.

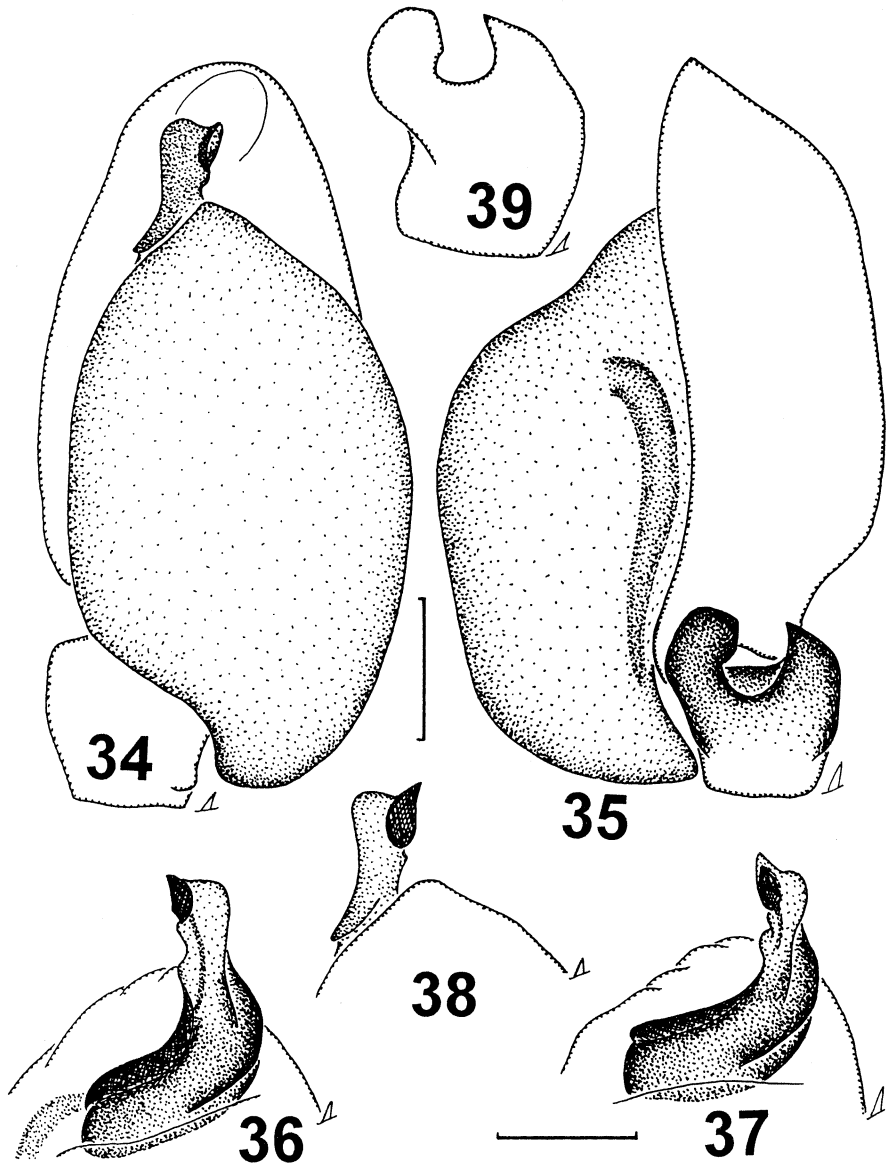
## DISTRIBUTION

The species seems to display a Euro-Baikal subboreal distributional pattern (fig. 48), but see also "Remarks".





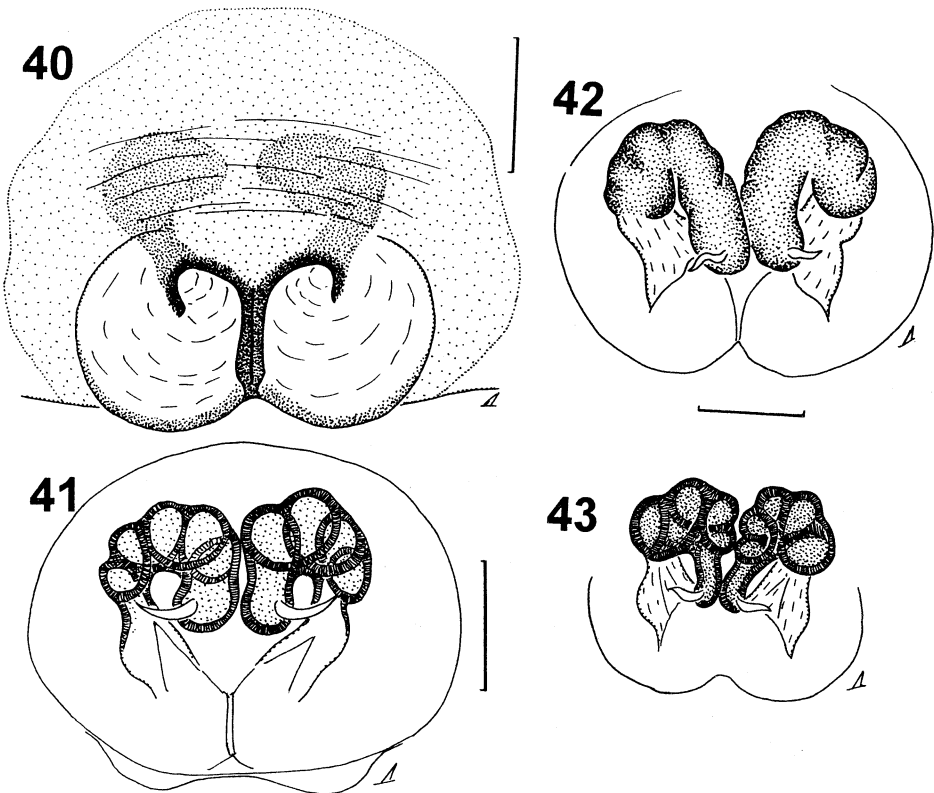
27-33. Male genitalia of *P. fuscipes* (form B): 27-28 - palp in ventral and lateral views, 29 - the LCP, 30-32 - the CSE, ventral and apical views, 33 - LTA and DTA. Abbreviations as explained in the text. Scale bar: 0.2 mm



34-39. Male genitalia of *P. fuscipes* (from A, probably *P. cinereofasciata*): 34-35 - palp in ventral and lateral views, 36-38 - the CSE, ventral and apical views, 39 - LTA and DTA. Abbreviations as explained in the text.  
Scale bar: 0.2 mm

## REMARKS

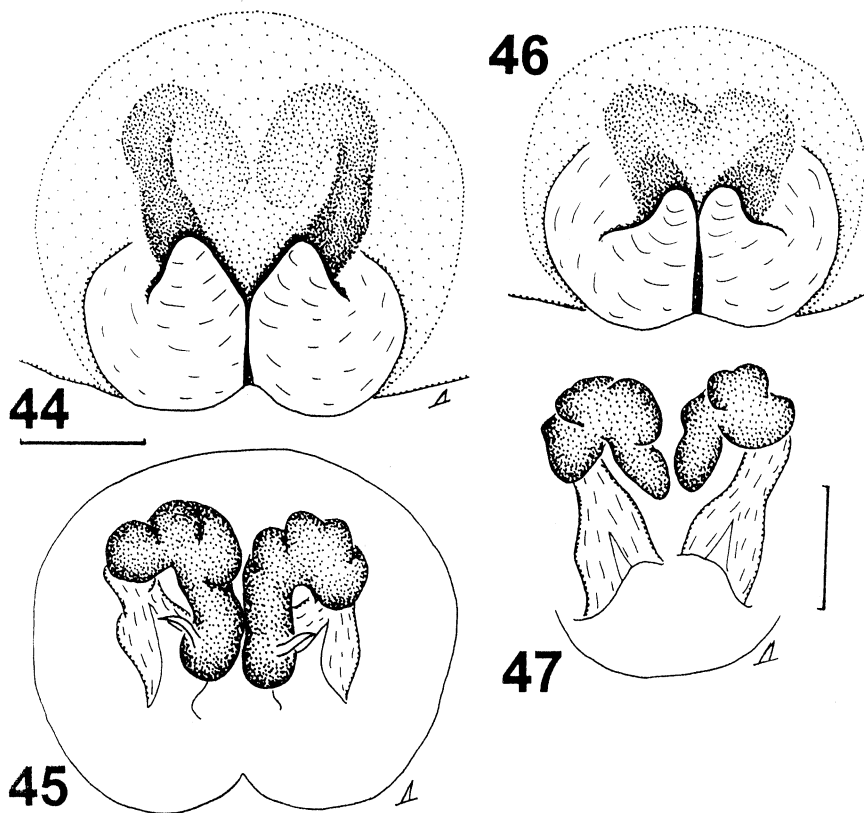
*P. fuscipes* demonstrates strong variation in the genitalic structure, with two morphs that can be clearly distinguished (indicated as forms A (figs 27-33, 40-43) and B (figs 34-39, 44-47) in the text). All the Caucasian and some Middle Asian males can be easily separated from Siberian specimens by the structure of the CSE (cf. figs 31, 32 and 36, 37), while females of both groups are practically indistinguishable because of strong variation of the epigyne and spermathecae (cf. figs 40-43 and 44-47). Most probably, in this case we deal with two separate species, the Caucasian specimens belonging to *P. cinereofasciata* (SIMON, 1868)(see fig. 48, squares). Besides, several records of *P. fuscipes* from southern regions of the European part of Russia, e.g. SPASSKY (1914), SPASSKY & SHNITNIKOV (1937), etc. appear to belong to *P. cinereofasciata* as well (fig. 48, question-marked circles). This question remains open until the type of the latter species is examined.



40-43. Female genitalia of *P. fuscipes* (form A): 40 - epigyne, 41-43 - spermathecae. Specimens: 40-41 - Khakassia, 42 - Chita Area, 43 - Tuva. Scale: bar 0.2 mm

## DESCRIPTION

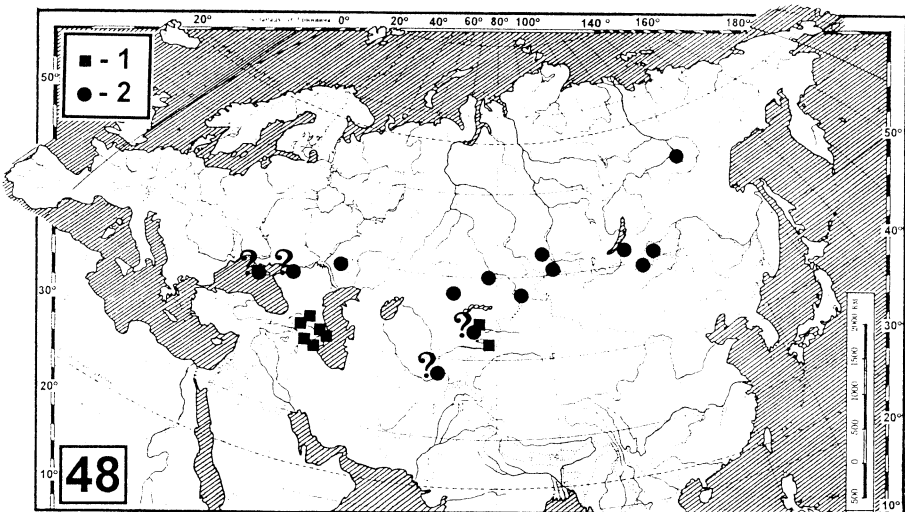
MALE. Measurements. Carapace 2.45-2.93 long, 1.63-2.00 wide, 1.00-1.08 high at PLE. Ocular area 0.93-1.05 long, 1.13-1.28 wide anteriorly and 1.13-1.30 wide posteriorly. Diameter AME 0.35-0.36. Abdomen 2.58-3.38 long, 1.70-1.95 wide. Clypeal height 0.23-0.35. Cheliceral length 0.65-0.90. Length of leg segments: leg I- 1.25-1.50+0.83-0.90+0.78-0.88+0.53-0.63+0.50-0.55; leg II- 1.16-1.43+0.65-0.88+0.65-0.79+0.50-0.63+0.50-0.55; leg III- 1.40-1.73+0.73-0.85+0.73-0.90+0.95-1.10+0.50-0.60; leg IV- 1.75-2.10+0.85-1.00+1.20-1.43+1.40-1.55+0.65-0.75. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-1-3; Tb. pr. 0-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-2-4; Pt. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. and rt. 1-2ap.; v. 2-2ap. Leg IV: Fm. d. 1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 2-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 0-2-2ap. Coloration. Carapace dark brown with black eye field. Clypeus brown, densely covered with white hairs. Sternum and chelicerae dark brown. Maxillae and labium dark brown with yellow tips. Abdomen grey. Dorsum with a



44- 47. Female genitalia of *P. fuscipes* (from A, probably *P. cinereofasciata*): 44, 46 - epigynes, 45, 47 - spermathecae. Specimens: 44-45 - Azerbaijan, 46-47 - Armenia. Scale bar: 0.2 mm

pair of dark brown longitudinal bands. Dark specimens have no markings, dark grey. Dorsal scutum small, about 1/3 length of abdomen. Book-lung covers yellow. Spinnerets dark grey. Legs dark brown. All femora darker than other segments, almost black. Tarsi sometimes yellow. Palpal structure as in figs 27-39.

**FEMALE.** Measurements. Carapace 2.55-3.58 long, 1.88-2.08 wide, 1.30-1.38 high at PLE. Ocular area 0.95-1.05 long, 1.23-1.53 wide anteriorly and 1.28-1.54 wide posteriorly. Diameter AME 0.35- 0.43. Abdomen 3.50-4.13 long, 2.18-2.75 wide. Clypeal height 0.28-0.29. Cheliceral length 0.78-1.18. Length of leg segments: leg I- 1.251.48+0.80-0.93+0.73-1.13+0.48-0.65+0.45-0.55; leg II- 1.23-1.40+0.73-0.88+0.65-0.80+0.48-0.63+0.40-0.56; leg III- 1.43-1.80+0.68-0.98+0.75-0.93+0.85-1.03+0.58-0.78; leg IV- 1.85-2.38+0.90-1.20+1.35-1.55+1.50-1.80+0.63-0.83. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. pr. 1-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 0-1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-1, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. 1-1-2ap., rt. 1-2ap., v. 1-1-2ap. Coloration as in male. Epigyne and spermatheca as in figs 40-47.



48. Distribution of *P. fuscipes* in the USSR: 1 - from A (probably *P. cinereofasciata*), 2 - form B (true *P. fuscipes*)

***Phlegra profuga* sp.n.**

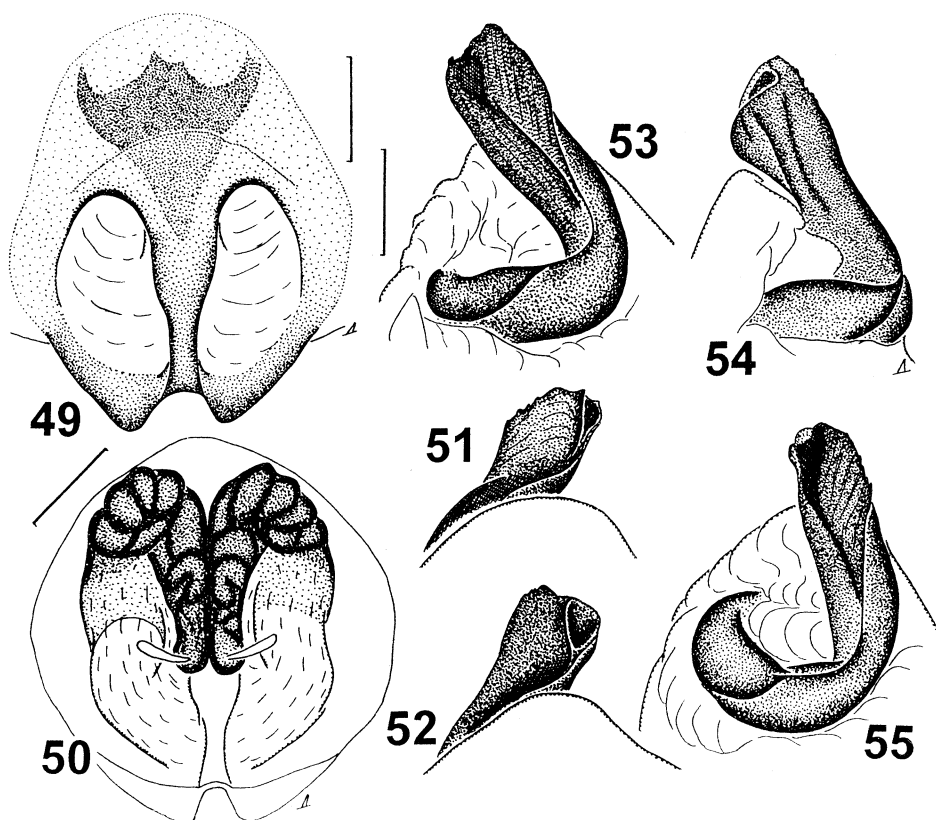
(Figs 49-56)

*Phlegra cf. sogdiana*: LOGUNOV 1992: 64.

## MATERIAL EXAMINED

Holotype: 1 M from Tuva, Siberia (type locality): 3-5 km N of Kyzyl, 700-900 m a.s.l., 21.IX.1989 (D.L., BI, 541).

Paratypes: TUVA. Environs of Kyzyl: 3-5 km N of Kyzyl, 700-900 m a.s.l., 20.V-7.VI.1989 (D.L., BI, 537), 3 F, (MNH), 1 M, 4 F; same locality, 3-22.VII.1989 (D.L., ZMMU, Ta-4787), 1 M, 4 F, (D.L., BI, 539), 1 F; same locality, 21.IX.1989 (D.L., BI, 1153), 1 M, 2 F; same locality, 7.V-3.VII.1990 (D.L., ZMMU, Ta-4788), 2 F, (D.L., BI, 534, 542, 543), 5 F; same locality, 28.V-2.VI.1993 (D.L. and A. V. GROMOV, BI, 1783), 12 M, 19 F. Kyzylskij Distr.: 65 km W of Kyzyl, Otuk-Dash natural limits, 10.V.1990 (D.L., BI, 542), 1 F. Ovyurskij Distr.: 40-45 km W of Oo-Shinaa, Irbitei River, 18-19.VI.1993 (D.L., BI, 1784), 1 M, 1 F. - KYRGHYZSTAN. Dzhahal-Abad Area: Suzakskij Distr., Yangi-Dekhkan, 3.XI.1986 (D.L., BI), 1 M. - KAZAKHSTAN. West-Kazakhstan [Ural'skaya] Area: Dzhanybek, 3-6.V.1975 (coll.?, ZMMU, Ta-4789), 1 M. Semipalatinsk Area: Makantchi Distr., 101 km of



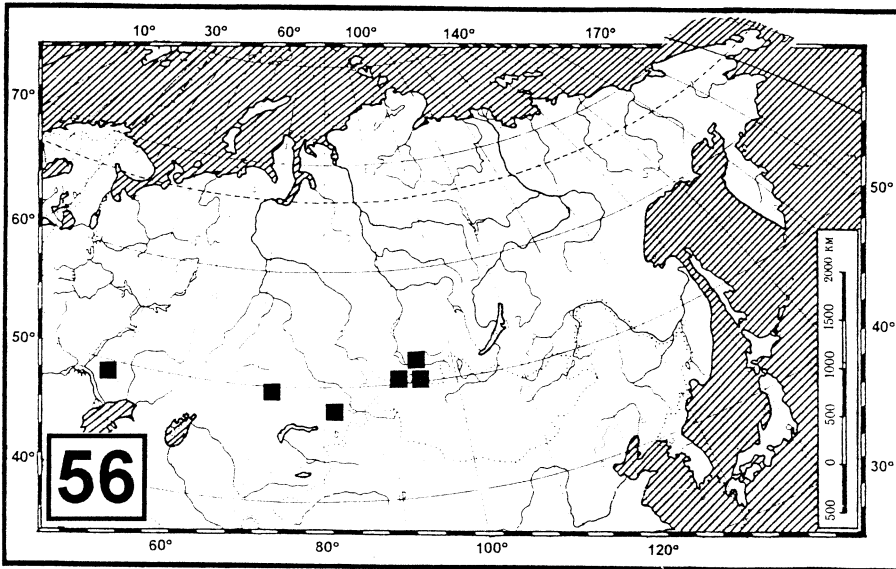
49-55. *P. profuga*: 49 - epigyne, 50 - spermathecae, 51-55 - the CSE, ventral (51-52) and apical (53-55) views.

Scale bar: 0.2 mm

highway Karabulak-Makantchi, Arkaly Mountains, 4.X.1990 (A.Z., BI, 540), 1 M. Pavlodar Area: Majskij Distr., the lower Tundyk River, 31.VII.1990 (O.L., BI, 536), 1 F.

#### DIAGNOSIS

This species is most closely related to *P. andreevae* from Middle Asia, being vicariant with it (see above). *P. profuga* can be clearly distinguished from the latter species based on males only, as their CSE lack small teeth on dorsal chitinous ridge (figs 51-55). Females practically cannot be distinguished. The only difference is a longer epigynal septum (cf. figs 49 and 13, 14). Spermathecal structure strongly varies, and the differences seen between figs 50 and 14 cannot be seen in many cases. Additionally, specimens of *P. profuga* appear to be darker than those of *P. andreevae*, they being usually dark brown or dark grey, while the latter are more often yellow.



56. Distribution of *P. profuga*

#### DISTRIBUTION

The species has a Kazakhstan -West Mongolian subboreal distributional pattern, being recorded from Tuva, North Kazakhstan and Kyrgyzstan (fig. 56).

#### DESCRIPTION

**MALE.** Measurements. Carapace 2.45-3.05 long, 1.74-2.00 wide, 0.88-1.10 high at PLE. Ocular area 0.98-1.15 long, 1.23-1.40 wide anteriorly and 1.18-1.40

wide posteriorly. Diameter of AME 0.35-0.38. Abdomen 2.75-2.90 long, 1.65-1.70 wide. Cheliceral length 0.60-1.00. Clypeal height 0.13-0.18. Length of leg segments: leg I- 1.18-1.63+0.68-0.90+0.78-1.05+0.53-0.70+0.48-0.55; leg II- 1.13-1.50+0.68-0.88+0.70-0.88+0.50-0.63+0.45-0.60; leg III-1.40-1.68+0.70-0.88+0.80-0.95+0.95-1.13+0.58-0.65; leg IV- 1.75-2.15+0.80-0.95+1.20-1.50+1.43-1.80+0.68-0.80. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. pr. 0-1, v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. pr. 0-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-0-2-5; Pt. pr. and rt. 0-1-0; Tb. pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. d. 1-1, pr. and rt. 1-0-2ap., v. 2-2ap. Leg IV: Fm. d. 1-1-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. d. 1-1, pr. and rt. 1-1-2ap., v. 0-1-2ap. Coloration. Carapace dark brown with a pair of white longitudinal bands. Clypeus covered with long white hairs forming triangle-shaped figure. Sternum, maxillae and labium yellowish-brown to brown. Chelicerae brown to dark brown. Abdomen yellowish-brown to grey, dorsum usually having a pair of longitudinal dark brown bands. Spinnerets yellowish-brownish. Spinnerets dark brown. Legs brown to yellow-brown. Palp brown. CSE structure as in figs 51-55.

FEMALE. Measurements. Carapace 3.13-3.85 long, 2.05-2.58 wide, 1.28-1.55 high at PLE. Ocular area 1.20-1.23 long, 1.43-1.68 wide anteriorly and 1.45-1.70 wide posteriorly. Diameter of AME 0.40-0.48. Abdomen 3.35-4.75 long, 2.13-3.20 wide. Cheliceral length 0.88-1.00. Clypeal height 1.00. Length of leg segments: leg I- 1.55-1.75+0.95-1.18+0.93-1.08+0.65-0.75+0.55-0.65; leg II- 1.55-1.75+0.95-1.18+0.80-1.00+0.65-0.75+0.60-0.63; leg III- 1.75-2.13+0.90-1.10+1.00-1.10+1.15-1.25+0.68-0.78; leg IV- 2.20-2.63+1.05-1.30+1.60-1.85+1.80-2.13+0.83-0.93. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. pr. 0-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-1-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. 1-0-2ap., rt. 1-1-2ap., v. 2-2ap. Leg IV: Fm. d. 0-1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. pr., rt. and v. 1-1-2ap. Coloration as in male except legs lighter, usually yellow with numerous brown bands. Epigyne and vulva as in figs 49, 50.

#### ETYMOLOGY

The specific name is derived from the Latin word "profugus", meaning "running away, escaping".

### *Phlegra sogdiana* CHARITONOV, 1946

(figs 57-73)

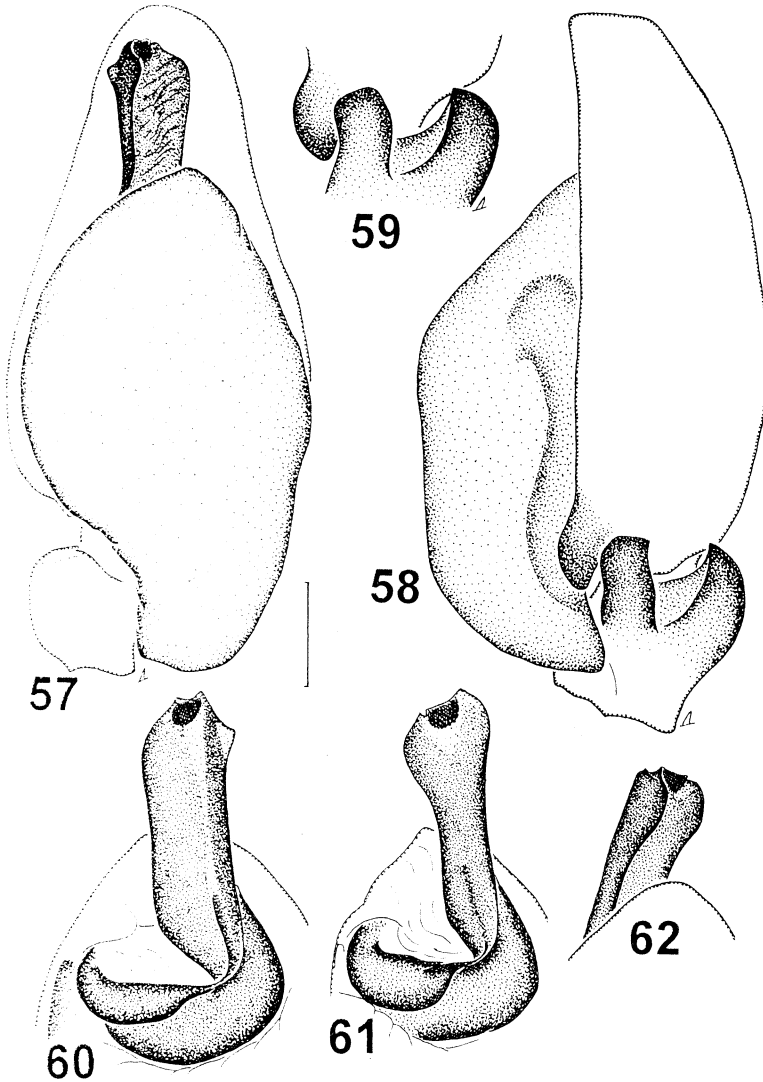
*Phlegra sogdiana* CHARITONOV, 1946: 30, figs 55-56; Ibid. 1969: 127; ANDREEVA 1975: 339; Ibid. 1976: 87, figs 110-115; PRÓSZYŃSKI 1979: 316, figs 268-270; NENILIN 1984a: 26; Ibid. 1985: 135.

#### MATERIAL

FORM "A". UZBEKISTAN. Kashkadarja Area: Yakkabagskij Distr., environs of Ishkent, 16.IV.-28.VI.1942 (D. M. Fedotov, PSU), 1 M (lectotype, designated



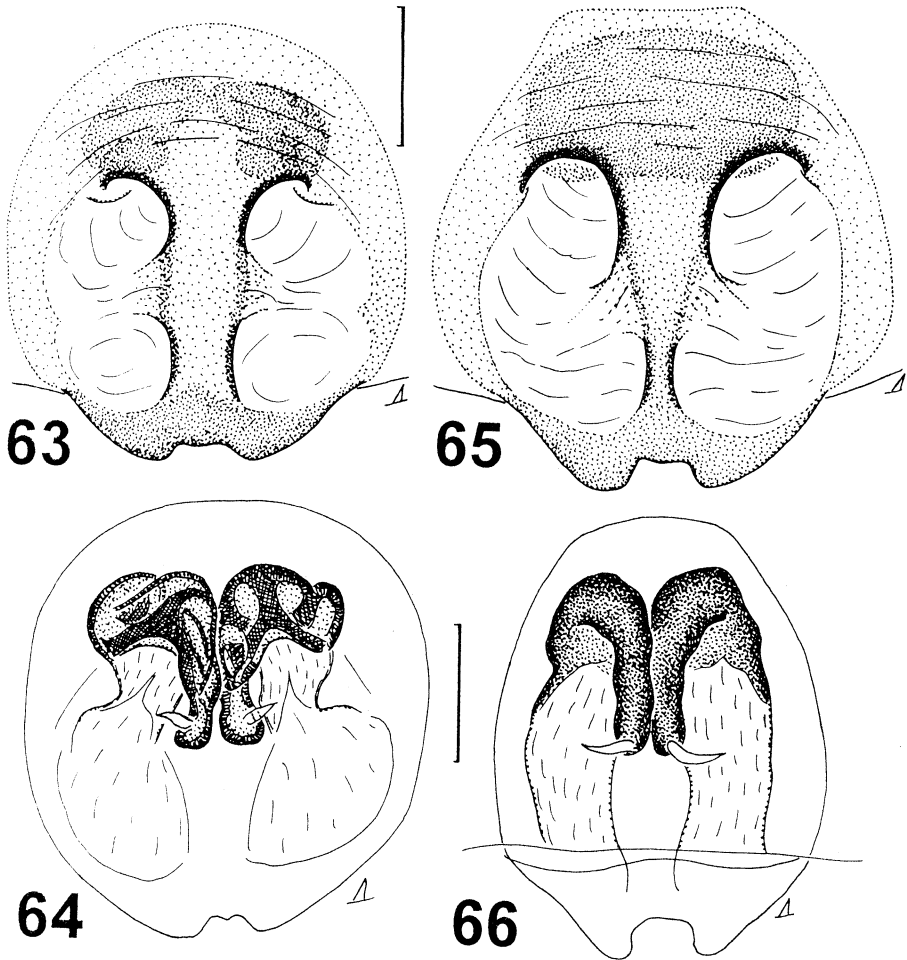
here), 1 F (paralectotype). Samarkand Area: Sovetabadskij Distr., Ulus, 1.VI.1986 (A.Z., ZMMU), 1 M. - TURKMENIA. Kugitangtau Mt Range: Khodzhafil' natural limits, 1000 m a.s.l., 10.V.1984 (S.Z., BI), 1 M; West Kugitang, 5 km SE of Bazar-Depe, 5-11.IV.1991 (V.D. & V.Z., BI), 1 M. - TAJIKISTAN. Kurgan-Tyube Area: Ilyitchovskij Distr., Aruktau Mt Range, Gandzhina, 800 m a.s.l., 13-21.04.1986



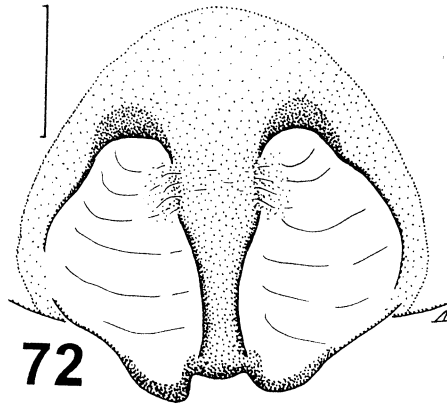
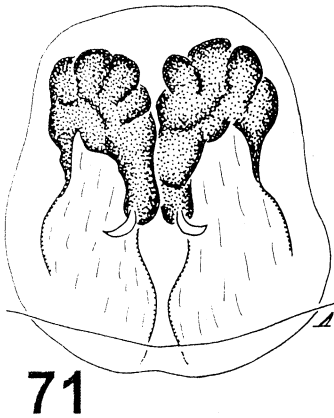
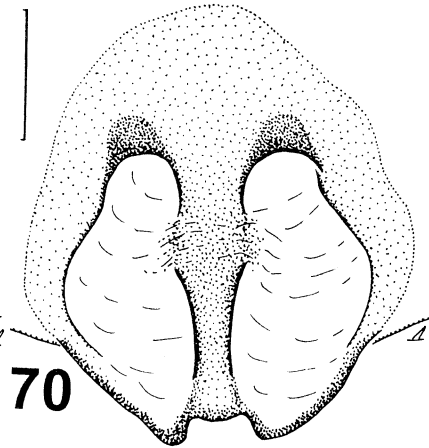
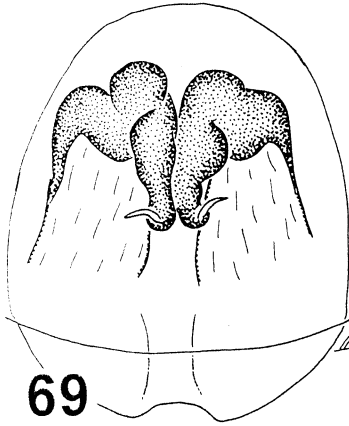
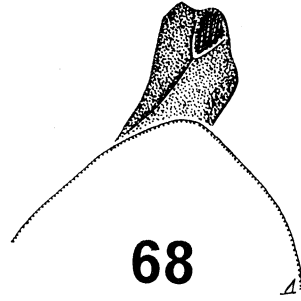
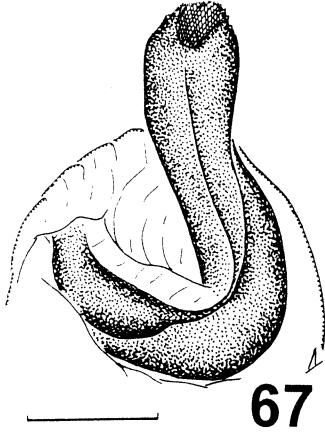
57-62. Male genitalia of *P. sogdiana* (form A): 57-58 - palpus in ventral and dorsal views, 56 - LTA and DTA, 60-62 - the CSE in apical (60, 61) and ventral (62) views. Abbreviations as explained in the text.

Scale bar: 0.2 mm

(A.Z. & S.Z., BI), 3 M, 2 F, (A.Z. & S.Z., RINS), 1 M, 1 F; same locality, 19.VI.1986, (S.Z., BI), 1 M; same locality, 9.IV-15.V. 1967 (E.A., IZW), 1 M; Beshkentskaya Valley, Tchiluchor-Tchashma Spring, 27.VI.1967 (E.A., IZW), 1 F. Area unknown: Gissarskij Mt Range, Ramit Reserve, 2-7.V.1986 (S.Z., ZMMU), 2 M; same locality, 12.VI-7.VII.1967, (E.A., IZW), 3 M, 2 F; Zeravshansky Mt Range, Iman-Kutan, 28.V.1965 (TCHIKATUNOV, ZMMU), 1 M (palp only), 1 F; Kuibyshevskij Distr., 4.V.1948 (E. Luppova, ZIP), 2 M; Kondara, 12.VIII.1948 (E. LUPPOVA, ZIP), 1 M, 1 F; environs of Dushanbe City, Gul'bista, 27.VII.1970 (L. ZHARKOV, IZW), 1 F.

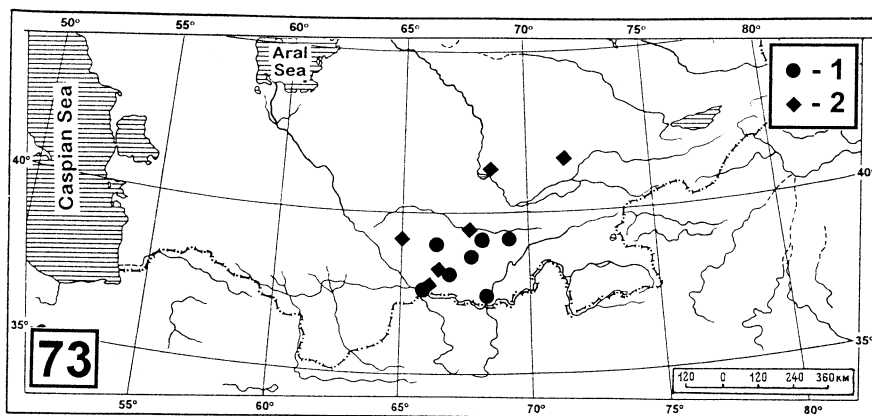


63-66. Female genitalia of *P. sogdiana* (form A): 63, 65 - epigynes, 64, 66 - spermathecae. Scale: 0.2 mm



67-72. Genitalia of *P. sogdiana* (from B): 67-68 - the CSE, apical and ventral views, 69, 71 - spermathecae, 70, 72 - epigynes. Abbreviations as explained in the text. Scale bar: 0.2 mm

FORM "B". UZBEKISTAN. Samarkand Area: Sovetabad Distr., Zeravshanskij Mt Range, 2.5 km upper of Dzham, 9.VI.1990, (E. KOPDYKBAEV & A.Z., BI, 1140), 3 F; same locality, 8.V.1990 (A.F. & A.Z., MNH), 2 F; 7 km N of Kitab, south foothills of Zeravshanskij Mt Range, 26.IV.1993 (D.L. & A.Z., BI), 23 M, 33 F. Dzhizak Area: along road Tashkent-Samarkand, near turn to Bakhmal, 5.V.1990 (A.F. & A.Z., BI), 1 M. Tashkent Area: Chatkalsky State Reserve, Bosh-Kyzyl Sai, 26-31.V.1979 (A.N., ZMMU), 1 M. Surkhandarja Area: Kugitangtau Mt Range, Bagly-Dara and Kampyrtepa natural limits, 17-19.IV.1983 (A. B. Nenilin, BI, 1154), 2 M, 1 F; Bajsunskij Distr., Khatak, Baglydara Canyon, 1500-1800 m a.s.l., 28.IV.1984 (coll.?, BI), 1 F. - KAZAKHSTAN. South-Kazakhstan [Tchimkent] Area: Saryagatch Distr., Kaplanbek Sovkhoz, 24.IV.1981 (A.N., ZMMU, Ta-3426), 1 M; same area, Chernyaevka, 14.IV.1980 (A.N., ZMMU), 1 F; same area, Arys', 24.04-3.05.1988 (D.L., MNH), 1 M. - TAJIKISTAN. Kurgan-Tyube Area: Aktau Mt Range, 15.V.1967 (E.A., IZW), 1 M. - TURKMENISTAN. Kopetdagh Mts: Kopetdagskij Reserve, Kalininskij Zakaznik, 18.V.1987 (V.D., BI), 1 F. Chardjou Distr.: Kugitangtau Mt Range, Khodzhafil' locality, 1200 m a.s.l., 9.05.1984 (A. V. TANASEVITCH, ZMMU), 1 M, 2 F.



73. Distribution of *P. sogdiana*: 1 - form A, 2 - form B

#### DIAGNOSIS

This species is closely related to the parapatric *P. andreevae*, with which it can be mixed in the semisympatric zone (figs 16, 73), especially taking into account the existence of apparently hybrid specimens [Form B (figs 67-72), for discussion see above]. The true males of *P. sogdiana* can be separated from *P. andreevae* by the structure of the embolus, which is longer and not notched (cf. figs 60-62 and 8-12), and by the absence of protruded tufts of white hairs on the palpal patella and cymbium (only black sparse hairs present). Females have the epigyne neither with a

slightly pronounced septum, form A, (fossae visibly divided into two parts) (figs 63, 65) and smaller spermathecae (figs 64, 66).

#### DISTRIBUTION

Tajikistan and adjacent territories (fig. 73).

#### DESCRIPTION

**MALE.** Measurements. Carapace 2.78-3.55 long, 1.88-2.38 wide, 1.03-1.28 high at PLE. Ocular area 1.15-1.25 long, 1.40-1.68 wide anteriorly and 1.35-1.63 wide posteriorly. Diameter AME 0.40-0.45. Abdomen 2.60-3.33 long, 1.70-2.10 wide. Clypeal height 0.24-0.33. Cheliceral length 0.93-1.25. Length of leg segments: leg I- 1.10-1.78+0.65-1.13+0.70-1.13+0.58-0.75+0.58-0.75; leg II- 1.08-1.75+0.60-1.08+0.68-1.00+0.60-0.78+0.53-0.65; leg III- 1.65-2.05+0.90-1.00+0.88-1.10+1.05-1.38+0.65-0.78; leg IV- 2.002.40+0.93-1.15+1.40-1.63+1.55-1.85+0.78-0.90. Leg spination. Leg I: Fm. d. 0-1-1-4; Tb. pr. 1-1, v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-4; Tb. pr. 1-1, v. 1-1-2ap., Mt. v. 2-2ap. Leg III: Fm. d. 0-1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. and v. 1-2ap., rt. 1-1-2ap. Leg IV: Fm. d. 1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-0, pr. 1-1-2ap., rt. 1-2ap., v. 1-1-2ap. Coloration. Carapace brownish-orange to brownish-red, with white hairs forming two longitudinal bands. Sides of carapace and area between bands covered with thick black hairs. Eye field black. Clypeus orange, with sparse bristle of dark hairs. Sternum and chelicerae brownish-orange to brownish-red. Maxillae and labium same colour, with white tips. Abdomen yellowish to dark grey, covered with thick grey hairs. Dorsum with two wide longitudinal bands of dark brown hairs. Sides of abdomen and area between bands with white stripes composed of white and goldish hairs. Small dorsal scutum covered with light hairs, occupying about 1/3 length of abdomen. Book-lung covers yellowish. Spinnerets brownish. All legs yellow-brown, while tibiae and patellae usually darker. Palp brownish, covered with black hairs, structure as in figs 57-62.

**FEMALE.** Measurements. Carapace 2.88-3.45 long, 1.90-2.33 wide, 1.15-1.25 high at PLE. Ocular area 1.08-1.20 long, 1.48-1.65 wide anteriorly and 1.38-1.60 wide posteriorly. Diameter AME 0.40- 0.45. Abdomen 3.18-5.25 long, 2.20-3.25 wide. Clypeal height 0.20- 0.25. Cheliceral length 0.93-1.13. Length of leg segments: leg I- 1.35-1.65+0.86-1.00+0.80-0.95+0.55-0.63+0.53-0.65; leg II- 1.35-1.53+0.83-0.95+0.75-0.90+0.58-0.65+0.48-0.60; leg III- 1.55-1.80+0.80-1.00+0.85-0.95+0.73-1.11+0.60-0.70; leg IV- 2.03-1.85+0.951.00+1.40-1.43+1.60-1.63+0.70-0.78. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 0-1-1-3; Tb. pr. 1-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 0-1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 1-1-3; pat. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. 1-1-2ap., rt. 1-2ap., v. 1-1-2ap. Coloration similar to that of male except as follows: some specimens lighter and pale; all legs mottled, with yellow and brown spots; palpi yellow except femora of which 2/3 length brown; brown dorsal spots on palp tibiae. Epigyne and spermathecae as in figs 63-66.

### The *bresnieri* species group

Members of this group can be recognized by the distinctive genitalia. Males have the palp with a more or less subparallel tibial apophysis (fig. 75) and a slender embolus (fig. 76). Females have the epigyne with large round fossae, but without a median septum (fig. 78); spermathecae tube-chambered, with tube-like inlet ducts (fig. 79). Besides *P. bresnieri*, this group also includes: *P. bresnieri meridionalis* STRAND, 1906; *P. pisarskii* ŽABKA, 1985; *P. samchiensis* PRÓSZYŃSKI, 1978; *P. tibetana* SIMON, 1901; *P. particeps* (O. P.-CAMBRIDGE, 1872) and *P. pusilla* WESOŁOWSKA, 1994. For drawings and descriptions of these species see ŽABKA (1985: figs 455-457), PRÓSZYŃSKI (1978: figs 14-18) and WESOŁOWSKA (1994: figs 140-143).

#### *Phlegra bresnieri* (LUCAS, 1846)

(figs 4, 5, 26, 74-79)

*Phlegra bresnieri*: PRÓSZYŃSKI 1976: map 18; DUNIN 1979: 36; Ibid. 1984a: 58.

#### MATERIAL

AZERBAIJAN: Apsheron Peninsula, 8.IV.1979 (P.D., BI), 4 M, 2 F, 2 juv.; Baku, 24.V.1976 (P.D., BI), 1 F; same locality, Dyubendy, 2.V.1986 (P.D., ZMMU), 1 F; same locality, Yasamal'skaya Valley, 1.V.1977 (P.D., ZMMU), 1 M; same locality, 14.VI.1981 (P.D., ZMMU), 1 F.

#### COMPARATIVE MATERIAL

ITALY: "Liguryiskie sea-coast" [Liguria], Cagoletto, 400 m a.s.l., 29.V.1966 (M. i J. PRÓSZYŃSCY, IZW), 1 M. - HERCEGOVINA: (Domanovic, IZW, coll. W. KULCZYŃSKI, sub."766"), 2 F.

#### DIAGNOSIS

The species can be easily separated from another *Aelurillinae* species in the ex-USSR fauna by the slender embolus of males (fig. 76) and by the structure of the vulva in females (fig. 79).

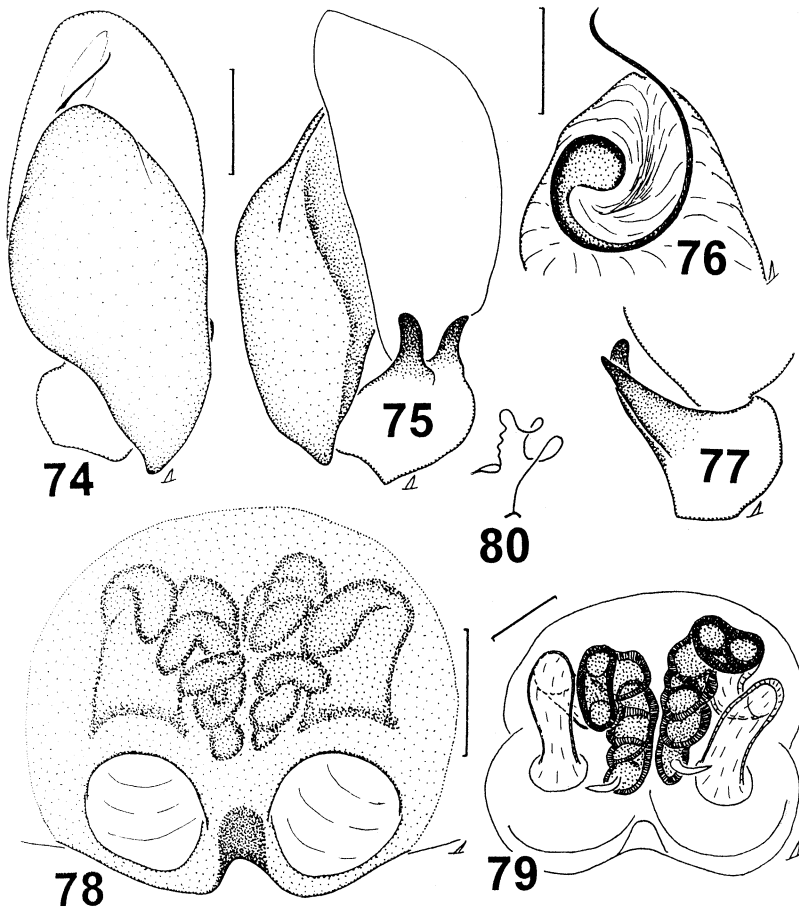
#### DISTRIBUTION

European subboreal range, the easternmost locality is the Apsheron Peninsula (fig. 26).

#### DESCRIPTION

MALE. Measurements. Carapace 1.70-2.65 long, 1.13-1.75 wide, 0.73-1.15 high at PLE. Ocular area 0.73-1.05 long, 0.95-1.28 wide anteriorly and 0.93-1.28 wide posteriorly. Diameter AME 0.26-0.38. Abdomen 1.70-2.55 long, 1.08-1.65

wide. Clypeal height 0.15-0.30. Cheliceral length 0.53-0.90. Length of leg segments: leg I- 0.85-1.35+0.45-0.83+0.50-0.88+0.41-0.65+0.35-0.53; leg II- 0.85-1.35+0.45-0.80+0.45-0.83+0.40-0.65+0.33-0.53; leg III- 0.95-1.48+0.45-0.75+0.50-0.85+0.63-1.03+0.38-0.58; leg IV- 1.15-1.80+0.48-0.85+0.78-1.20+0.85-1.38+0.48-0.70. Leg spination. Leg I: Fm. d. 1-1-3ap.; Tb. pr. 1-1, v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 1-1-3; Tb. pr. 1-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 1-1-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. d. 1-1-0, pr. and rt. 1-0-2ap., v. 2-2ap. Leg IV: Fm. d. 1-1-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. 1-0-2ap., rt. 1-1-2ap., v. 1-1-2ap. Coloration. Carapace



74-80. Genitalia of *P. bresnieri*: 74-75 - male palp in ventral and dorsal views, 76 - the CSE, apical view, 77 - LTA and DTA in reared view, 78 - epigyne, 79 - spermathecae, 80 - schematic course of the insemination ducts.

Abbreviations as explained in the text. Scale bar: 0.2 mm

brown with two longitudinal yellow bands. Eye field black. Clypeus yellow, densely covered with white hairs. Sternum, maxillae, labium brownish. Chelicerae yellow-orange. Abdomen grey-brown with three longitudinal white lines on dorsum. Dorsum with inconspicuous scutum occupying about 1/3 length of abdomen. Spinnerets: dorsal pair grey-brown, ventral one yellow-grey. All legs brown. Tibiae I, II almost black. Palpal structure as in figs 4, 5, 74-77.

FEMALE. Measurements. Carapace 2.25-2.30 long, 1.50-1.58 wide, 0.85-1.00 high at PLE. Ocular area 0.83-0.98 long, 1.15 wide anteriorly and 1.15-1.20 wide posteriorly. Diameter AME 0.33-0.35. Abdomen 2.88-3.65 long, 1.88-2.13 wide. Clypeal height 0.15-0.25. Cheliceral length 0.65-0.93. Length of leg segments: leg I- 1.05-1.10+0.58-0.70+0.63-0.65+0.45-0.48+0.38-0.40; leg II- 0.95-1.05+0.63+0.53-0.55+0.45-0.50+0.38-0.43; leg III- 1.20-1.30+0.63-0.67+0.65+0.75-0.78+0.45; leg IV- 1.43-1.63+0.68-0.78+1.05-1.08+1.13-1.20+0.53-0.55. Leg spination. Leg I: Fm. d. 1-1-3; Tb. v. 2-2-2ap.; Mt. v. 2-2ap. Leg II: Fm. d. 1-1-3; Tb. pr. 0-1, v. 1-1-2ap.; Mt. v. 2-2ap. Leg III: Fm. d. 1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. d. 1-1, pr. and rt. 1-0-2ap., v. 2-0-2ap. Leg IV: Fm. d. 1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. pr. 1-1-1-2ap., rt. and v. 1-1-2ap. Coloration light. Carapace yellow-brown with two dorsal, two lateral longitudinal yellow stripes. Eye field brown. Clypeus yellow, covered with white hairs. Sternum, maxillae, labium, chelicerae yellow. Abdomen: dorsum yellow-brown with three longitudinal yellow lines, venter grey-yellow. Spinnerets as in male. Epigyne and spermathecae as in figs 78-80.

#### ACKNOWLEDGEMENTS

I wish to express my warmest thanks to the following persons who contributed specimens for this study: Dr. A. A. ZYUZIN (Alma-Ata), Dr. A. P. KONONENKO (Dushanbe), Mr. O. V. LYAKHOV (Pavlodar), Mr. S. V. OVTCHINNIKOV, Mr. S. L. ZONSHTEIN and Mr. D. A. MILKO (the three latter from Bishkek). My special thanks are extended to Dr. K. G. MIKHAILOV, of the ZMMU, Prof. J. PRÓSZYŃSKI, of IZW, Dr. V. I. OVTSHARENKO, of the ZIP, and Dr. C. ROLLARD, of the NMNH for the opportunity to study some materials from their museums. Dr. A. A. ZYUZIN critically checked the typescript regarding collection localities in Middle Asia, and I am much obliged to him. Finally, my thanks also go to Dr. J. BERRY (Indianapolis), for kind linguistic help. This work was partially supported by the International Science Foundation, grant RA6000 and grant INTAS 3708.

#### REFERENCES

- ANDREEVA, E. M., 1975. Distribution and ecology of spiders (*Aranei*) in Tajikistan. *Fragm. faun.*, **20**(19): 325-352.
- , 1976. [Spiders of Tajikistan]. Donish, Dushanbe, 195 pp. [in Russian].
- ASTAKHOVA, E. V., 1974. [To the knowlegdes of the spider fauna of Khar'kov and Poltav Areas]. *Vestnik Kharkovskogo Universiteta (biologiya)*, **105**(5): 94-97 [in Russian].



- ASHIKBAYEV, N. Z., 1980. [Spiders in the biocenosis of an alfalfa field]. In *Ekologiya vreditel'ei i boleznei rasteniy v Kazakhstane i mery bor'by s nimi* (Ed. I. A. Kostin): 18-22. Alma-Ata [in Russian].
- AZHEGANOVA, N. S., 1951. [On the spider fauna of the Troichk forest-steppe reserve]. *Izvestia Estestvenno-Nauchnogo Instituta pri Molotovskom Gosudarstvennom Universitete imeni A. M. Gorkogo*, **13**(2-3): 137-156 [in Russian].
- , 1968. [An incomplete key to spiders]. Nauka, Leningrad [in Russian].
- CHARITONOV, D. E., 1932. *Katalog der russischen Spinnen*. AN SSSR, Leningrad, 206 pp.
- , 1936. [Supplement to the catalogue of Russian spiders]. *Utchyonye zapiski Permskogo gos. univ.*, **2**(1): 167-223.
- , 1946. [New forms of spiders of the fauna of the USSR]. *Izvestia Estestvenno-Nauchnogo Instituta pri Molotovskom Gosudarstvennom Universitete imeni A. M. Gorkogo*, **12**(3): 19-35 [in Russian].
- , 1969. [Materials on the spider fauna of the USSR]. *Utchyonye zapiski Permskogo gos. univ.*, *Biologiya*, **179**: 59-132 [in Russian].
- CODDINGTON J. A., 1990. Ontogeny and homology in the male palpus of orb-weaving spiders and their relatives, with comments on phylogeny (*Araneoclada: Araneoidea, Deinopoidea*). *Smithsonian contributions to Zoology*, **496**: 1-52.
- COMSTOCK, J. H., 1910. The palpi of male spiders. *Ann. Ent. Soc. Amer.*, **111**(3): 161-185.
- CUTLER, B., 1979. Variation in the embolus of *Metaphidippus insignis* (Banks). *New York entom. Soc.*, **87**(4): 270-274.
- DANILOV, S. N., 1989. [The spider family *Salticidae* (*Aranei*) of Transbaikalia]. In *Nasekomye i paukoobraznye Sibiri*. (Ed. V. G. Shilenkov et al.): 165-168. Irkutsk [in Russian].
- DANILOV, S. N., Logunov D. V., 1993. Faunistic review of the jumping spiders of Transbaikalia (*Aranei, Salticidae*). *Arthropoda Selecta*, **2**(4): 25-39.
- DAVIES, V. T., abka, M., 1989. Illustrated keys to the genera of jumping spiders (*Araneae, Salticidae*) in Australia. *Mem. Queensland Mus., Brisbane*, **27**(2): 189-266.
- DUNIN, P. M., 1979. [Materials on the spider fauna (*Salticidae*) of Azerbaijan]. *Utchyonye zapiski Azerbaijan Universiteta (biologiya)*, **1**: 35-40 [in Russian].
- , 1984. [Fauna and ecology of spiders (*Aranei*) of the Apsheon Peninsula (Azerbaijanskaya SSR)]. In *Fauna i ekologiya paukoobraznykh* (Ed. A. S. UTOCHKIN): 45-60. Perm [in Russian].
- , 1988. [Fauna and altitude distribution of spiders (*Arachnida, Aranei*) of the Azerbaijanian part of the south slope of the Caucasus Major]. In *Fauna i ekologiya paukov i skorpionov*. (Ed. LANGE A. B.): 31-39. Nauka, Moscow [in Russian].
- GALIANG, M. E., 1963. Las variaciones individuales en *Evophrys sutrix* Holmberg, 1874 (*Araneae, Salticidae*). *Revista de la Sociedad Ent. Arg.*, **24**(1961): 24-28.
- GORODKOV, K. B., 1984. [Range types of insects of tundra and forests zones of European Part of the USSR]. In *Provisional atlas of the insects of the European Part of the USSR. Atlas, Maps 179-221*. (Ed. K. B. Gorodkov): 3-20. Nauka, Leningrad [in Russian].
- GRISWOLD, C. E., 1987. A revision of the jumping spider genus *Habronattus* F. O. P.-CAMBRIDGE (*Araneae: Salticidae*), with phenetic and cladistic analyses. Univ. Calif. Press, Berkeley, Los Angeles, London, 344 pp.
- HARM, M., 1977. Revision der mitteleuropaeischen Arten der Gattung *Phlegra* Simon (*Arachnida: Araneae: Salticidae*). *Senck. biol.*, **58**(1/2): 63-77.
- IZMAILOVA, M. V., 1989. [Spider fauna of the south part of East Siberia]. *IGU, Irkutsk*, 180 pp. [in Russian].
- FET, V. Y., 1983. [The fauna of *Aranei* of the South-Western Kopetdagh]. *Entomol. review.*, **(62)**4: 835-845 [in Russian].
- KOPONEN, S., MARUSIK, Y. M., 1992. Spiders (*Araneae*) from Central Yakutia, Siberia. *Entomol. Fennica*, **3**: 163-166.
- KRASNOBAJEV, Y. P., 1990. [Spiders of the stonish steppes of the Zhigulevsk reserve]. In *Fauna i ekologiya paukov, skorpionov i lozhnoskorpionov SSSR*. (Ed. V. I. OVTSHARENKO): 83-90. Leningrad [in Russian].
- LEGOTAI, M. V., 1988. [Materials on the spider fauna (*Arachnida, Aranei*) Zakarpatya]. In *Fauna i ekologiya paukov i skorpionov*. (Ed. A. B. LANGE): 16-30. Moscow [in Russian].
- LOGUNOV, D. V., 1992. The spider family *Salticidae* (*Araneae*) from Tuva. II. An annotated check list of species. *Arthropoda Selecta*, **1**(2): 47-71.

- LOGUNOV, D. V., HEČIAK, S., in press. *Asianellus*, a new genus of the subfamily *Aelurillinae* (*Araneae*, *Salticidae*). Ent. scand., Copenhagen.
- MINORANSKY, V. A., GRAMOTENKO, V. P., PONOMARJOV, A. V., 1977. [Some data on the spider distribution in Rostov Area]. In Voprosy arachnoentomologii. Fauna i ekologiya paukov i krovososushikh nasekomykh. (Ed. A. S. UTOTCHKIN et al.): 92-105 Perm [in Russian].
- MINORANSKY, V. A., PONOMARJOV, A. V., 1984. [Materials on the spider fauna of Kalmykiya]. In Fauna i ekologiya paukoobraznykh. (Ed. A. S. UTOTCHKIN et al.): 82-92. Perm [in Russian].
- NENILIN, A. B., 1984a. [Materials on the fauna of the spider family *Salticidae* of the USSR. I. Catalogue of *Salticidae* of the Middle Asia]. In Fauna i ekologiya paukoobraznykh. (Ed. A. S. UTOTCHKIN et al.): 6-37. Perm [in Russian].
- , 1984b. [Materials on the fauna of the spider family *Salticidae* of the USSR. III. *Salticidae* of Kirgizhia]. In Entomol. issledovaniya v Kirgizii, No 17 (Ed. A. I. PROCHENKO): 132-143. Ilym Publ. House, Frunze [in Russian].
- , 1985. [Materials on the fauna of the spiders family *Salticidae* of the USSR. II. Results of the study in the USSR]. In Fauna i ekologiya paukov SSSR. Trudy Zool. Inst., Vol. 139 (Ed. V. I. OVTSHARENKO): 129-134. Leningrad [in Russian].
- ONO, H., 1988. A revisional study of the spider family *Thomisidae* (*Arachnida*, *Araneae*) of Japan. National Science Museum, Tokyo, 252 pp.
- OVTSHARENKO, V. I., 1978. [Spiders of the family *Salticidae* (*Aranei*) from the Caucasus Major]. Entomol. review, 57(3): 682-686 [in Russian].
- PAIK, K. Y., 1985. Studies on the Korean Salticid (*Araneae*) I. A number of new record species from Korea and South Korea. Korean Arachnol., 1(2): 43-53.
- PANOV, E. N., 1989. [Natural hybridization and ethological isolation in birds]. Nauka, Moscow, 510 pp. [in Russian].
- PAVLENKO, T. V., 1985. [Spatial distribution of spiders in the natural complexes of Barsakel'mes Island (Aralskoye More)]. In Fauna i ekologiya paukov SSSR. Trudy Zool. Inst., Vol. 139 (Ed. V. I. Ovtsharenko): 147-155. Leningrad [in Russian].
- PENG, X., XIE, L., XIAO, X., YIN, C., 1993. [Salticids in China], Hunan Nor. Univ. Pres, 270 pp. [in Chinese].
- PICHKA, V. E., SKUFJIN, K. V., 1981. [An additional data to the spider fauna of Central forest-steppe]. Vestnik Zoologii, 6: 7-16 [in Russian].
- POLOZHENTSEV, P. A., AKIMTSEVA, N. A., 1980. [Spiders (*Aranei*) of the forest biotops of Zakarpattia]. Entomol. review, 59(2): 448-450 [in Russian].
- POLTCHANINOVA, N. Y., 1988 [Spiders of the Chernomorskiy State Reserve]. In Fauna i ekologiya paukoobraznykh (Ed. A. S. UTOTCHKIN): 42-51. Perm [in Russian].
- , 1990. [Spiders of Provalje steppe]. In Fauna i ekologiya paukov, skorpionov i lozhnoskorpionov SSSR. Trudy Zool. Inst., Vol. 226 (Ed. V. I. Ovtsharenko): 83-90. Leningrad [in Russian].
- PRÓSZYŃSKI, J., 1976. Studium systematyczno-zoogeograficzne nad rodziną *Salticidae* (*Aranei*) Regionów Palearktycznego i Nearktycznego. Rozprawa Naukowa, WSRP, Siedlce, 260 pp. [in Polish].
- , 1978. *Araneae*: Fam. *Salticidae*, genera *Aelurillus*, *Langona*, *Phlegra* and *Cyrba*. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel. Ent. bas., Basel, 3: 7-21.
- , 1979. Systematic studies on East Palaearctic *Salticidae* III. Remarks on *Salticidae* of the USSR. Ann. zool. PAN, 34: 299-369.
- , 1990. Catalogue of *Salticidae* (*Araneae*). Synthesis of quotations in the world literature since 1940, with basic taxonomic data since 1758. Rozprawa Naukowa, WSRP, Siedlce, 366 pp.
- RICHMAN, D., 1982. Epigamic display in jumping spiders (*Araneae*, *Salticidae*) and its use in systematics. J. Arachnol., 10: 47-67.
- RICHMAN, D., CUTLER, B., 1978. A list of the jumping spiders (*Araneae*, *Salticidae*) of United States and Canada. Peckhamia, 1(5): 285-344.
- SAVELJEVA, L. G., 1970. [Fauna and zoogeographical connections of spiders of the East-Kazakhstan Area]. Biologiya i geografiya, 6: 78-88 [in Russian].
- , 1974. [Zonal-spatial distribution of spiders on the territory of the Eastern-Kazakhstan Area]. Biologicheskie nauki, 1: 50-54 [in Russian].

- , 1979. [The zoogeographical spider complexes (*Aranei*) from Eastern Kazakhstan]. In Priroda i khozyaistvo Vostochnogo Kazakhstana: 139-148. Ust'-Kamenogorsk [in Russian].
- , 1990. [*Salticidae* (*Araneae*) from Verkhnego Priirtysh'ya]. - In Okhrana okruzhayushei sredy i prirodopol'zovanie Priirtysh'ya. Tezisy, No II: 172-174. Ust'-Kamenogorsk [in Russian].
- STERWALD, P., 1990. Morphology and homologous features in the male palpal organ in *Pisauridae* and other spider families, with notes on the taxonomy of *Pisauridae* (*Arachnida: Araneae*). *Nemouria*, **35**: 1-59.
- SIMON, E., 1903. Histoire naturelle des Araignées, 2(4): 669-1080. Paris.
- SPASSKY, S. A., 1914. Die Spinnen des Don-Gebietes. Bull. Inst. Polytechn. du Don. III. Novotscherkassk, Novotscherkassk, Bd. 3, Hft 2: 85-97.
- , 1937. [Materials on the spider fauna of the Black-Sea-board]. - In Sbornik nauchno-issledovatel'skikh rabot Azovskogo Chernomorskogo Selkhoz.-Instituta, **5**: 131-138. [in Russian].
- SPASSKY, S. A., SHNITNIKOV, V. N., 1937. [Materials on the spider fauna of Kazakhstan]. Trudy Kazakhskogo filiala AN SSSR, **2**: 265-300 [in Russian].
- SHTERNBERG, M. T., 1974. [Materials on the spider fauna (*Aranei*) of Latvianian SSR. I. Fam. *Salticidae*]. Latv. entomol. Riga, **16**: 65-70 [in Russian].
- TYSHCHENKO, V. P., 1971. [Illustrated key to spiders of the European part of the USSR]. Nauka, Leningrad, 281 pp. [in Russian].
- VILBASTE, A. K., 1969. [Spiders of Estonia. I. Families *Xysticidae*, *Philodromidae* and *Salticidae*]. Valgus, Tallinn, 224 pp. [in Estonian].
- WANLESS, F. R., 1988. A revision of the spider group *Astieae* (*Araneae: Salticidae*) in the Australian Region. *New Zealand journal of zoology*, **15**: 81-172.
- WEISS, I., 1979. Das Mnchen von *Phlegra m-nigra* (KULCZYŃSKI, 1891), nebst Betrachtungen ber Bau und Funktion der Kopulationsorgane mitteleuropischer Arten der Gattung *Phlegra* S.L. (*Arachnida: Araneae: Salticidae*). Muzeul Brukenthal, Studii i Comunicri, t. nat., **23**: 239-250.
- WESOŁOWSKA, W., 1994. The jumping spiders of Yemen. Yemeni-German Plant Prot. Project, Yemen, 86 pp.
- YIN, C. M., WANG, J. F., 1979. [A classification of the jumping spiders (*Araneae, Salticidae*) collected from the agricultural field and other habitats]. J. Hunan Teachers' Coll. (Nat. Sci. Edition) **1**: 1-37 [in Chinese].
- ŽABKA, M., 1985. Systematic and zoogeographic study on the family *Salticidae* (*Araneae*) from Viet-Nam. *Ann.zool. PAN*, **39**(11): 1-485.