

## A review of the genus *Pellenes* in the fauna of Central Asia and the Caucasus (Araneae, Salticidae)

D. V. LOGUNOV<sup>1</sup>, Y. M. MARUSIK<sup>2</sup> and S. YU. RAKOV<sup>3</sup>

<sup>1</sup>Zoological Museum, Institute for Systematics and Ecology of Animals, Frunze Str. 11, Novosibirsk 630091, Russia

<sup>2</sup>Institute for Biological Problems of the North, Russian Academy of Sciences, K. Marx pr. 24, Magadan 685010, Russia

<sup>3</sup>Zoological Museum Tomsk State University, Lenina pr. 36, Tomsk 634010, Russia

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The paper is a review of the genus *Pellenes* (*s. lat.*) in the fauna of Central Asia and the Caucasus. The genus *Pellenes* (*s. lat.*) is redefined and subdivided into four subgenera according to the structure of genitalia: *Pellenes* (*s. str.*), *Pelpaucus* subgen. nov., *Pelmultus* subgen. nov. and *Pelmirus* subgen. nov. Altogether 23 species have been treated, of which nine are described as new to science: *Pellenes amazonka* sp. nov. (female), *P. badkhyzicus* sp. nov. (male), *P. borisi* sp. nov. (female), *P. karakumensis* sp. nov. (male), *P. bonus* sp. nov. (male), *P. pamiricus* sp. nov. (male and female), *P. pseudobrevis* sp. nov. (male and female), *P. sytchevskayae* sp. nov. (male and female) and *P. turkmenicus* sp. nov. (male and female). Five species are newly synonymized: *P. maderianus* Kulczyński, 1905 with *P. epularis* (O. P.-Cambridge, 1872); *P. kulabicus* Andreeva, 1976 and *P. simoni* (O. P.-Cambridge, 1872) with *P. geniculatus* (Simon, 1868); and *P. albomaculatus* Peng and Xie, 1993 with *P. denisi* Schenkel, 1963; *P. tauricus* (Thorell, 1875) is removed from synonymy with *P. simoni* (O. P.-Cambridge, 1872) and is shown to be a junior synonym of *P. nigrociliatus* (Simon in L. Koch, 1875). A lectotype is designated for *Pellenes brevis* Simon, 1868. *P. campylophorous* (Thorell, 1875) is recognized to be *nomen dubium*. *Pellenes calvus* (Simon, 1868) is excluded from the Central Asian fauna of *Pellenes*. *Evarcha lapponica* (Sundevall, 1832), comb. nov. (ex *Pellenes*), is proposed. Some morphological terms, e.g. the median septum, the epigynal flaps, the central blind-ending pocket and the newly proposed 'compound terminal apophysis', are discussed in relation to their homology.

KEYWORDS: taxonomy, revision, Salticidae, *Pellenes*, Central Asia, the Caucasus.

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### Introduction

*Pellenes* Simon, 1876 belongs to one of the most difficult salticid genera and currently numbers 64 described species (Prószyński, 1990). No revisions (neither regional nor general) of the genus have so far been published.

According to Mikhailov (1997), 20 *Pellenes* species have been recorded in the fauna of the ex-USSR. It is necessary to add to them a twenty-first species, *Pellenes brevis* Simon, 1868, which was reported by Prószyński (1979: figures 236–238) under the name *Pellenes* sp.-1 (current data, see below). Of these species, nine were hitherto listed for Central Asia and the Caucasus (Nenilin, 1984a, 1985; Dunin, 1984). However, most of these records have been in need of a careful revision and/or confirmation through reference to the original material. Some Central Asian *Pellenes* species, namely *P. denisi* and *P. gobiensis*, were re-studied and re-described by Wesolowska (1981) and Logunov (1992). Recently, Logunov and Marusik (1994) re-examined the *P. tripunctatus* species group, included redescriptions of all the species and detailed their distribution. The rest of the *Pellenes* species reported from the fauna of the ex-USSR (but actually from Central Asia and the Caucasus), as well as newly collected ones (altogether 23), are treated in the current study.

One species, *Evarcha lapponica* (Sundevall, 1832), comb. nov. (ex *Pellenes*), is not actually a member of *Pellenes*, as it was earlier assumed (see Prószyński, 1990). Both genitalic and somatic characters (see Danilov and Logunov, 1993: figures 3a–d) leave no doubt that the species should belong to the genus *Evarcha*. We here propose a new combination for the species and exclude it from further consideration.

*Pellenes calvus* (Simon, 1868), which has been repeatedly reported from Central Asia (Nenilin, 1984b, 1985; Mikhailov and Fet, 1994; Mikhailov, 1997), is excluded from the Central Asian fauna of *Pellenes*. We re-examined all the specimens determined by Nenilin as *P. calvus* and found them to belong to either *P. epularis* or *P. allegrii* (see below). However, according to Roewer (1954), *P. calvus* may be a senior synonym of *P. epularis*, this opinion being followed by Prószyński (1990). We have been unable to revise the holotype of *P. calvus*, which is absent from the MNHN, and hence consider both species to be distinct. The problem calls for special attention in the future.

The goals of the present paper are (1) to redefine the genus *Pellenes* (*s. lat.*) and ascertain its affinities and intrageneric classification; (2) to review all species found in the fauna of Central Asia and the Caucasus; (3) to describe new and poorly known species found during the current study; and (4) to detail distribution of all the species examined within the studied area.

### Material and methods

This study was based on an examination of over 300 adult specimens collected from Central Asia and the Caucasus.

Abbreviations for the museums and institutes from which material was borrowed or examined are as follows: ISE—Institute for Systematics and Ecology of Animals, Novosibirsk, Russia (Dr D. V. Logunov); IZW—Institute of Zoology, Warsaw, Poland (Prof. J. Prószyński); MNHN—Museum national d'Histoire naturelle, Paris, France (Dr C. Rollard); PSU—Chair of Zoology, Perm State University, Perm, Russia (Dr S. L. Esyunin); SMF—Senckenberg Museum, Frankfurt am Main, Germany (Dr M. Grasshoff); SMNH—Swedish Museum of Natural History, Stockholm, Sweden (Dr T. Kronstedt); WZM—Wroclaw Zoological Museum, Wroclaw, Poland (Dr W. Wesolowska); ZISP—Zoological Institute, St.-Petersburg, Russia (Dr V. I. Ovtsharenko); ZMTU—Zoological Museum of the Tomsk State University, Tomsk, Russia (Mr S. Yu. Rakov); ZMHU—Zoological Museum of the Helsinki University, Helsinki, Finland (Dr J. Terhivuo); ZMMU—Zoological Museum of the Moscow State University, Moscow, Russia (Dr K. G. Mikhailov).

Only relevant literature concerned with the spider fauna of the territory studied is included in the text. For a complete list of taxonomic sources for each species involved see Kharitonov (1932, 1936), Roewer (1954) and Prószyński (1990).

Abbreviations used in figures and the text: ADP—anterodorsal projection of cymbium; AG—accessory gland; AL—atrial lip; ap.—apical; CBP—central blind-ending pocket; CP—copulatory pore; C—cymbium; CR—cymbial ridge; CTA—compound terminal apophysis; d.—dorsal; E—embolus; EF—epigynal flap; FD—fertilization duct; Fm—femur; ID—insemination ducts; MS—median septum; Mt—metatarsus; PDP—posterodorsal projection of cymbium; pr.—prolateral; PRR—primary receptacle; Pt—patella; rt.—retrolateral; SRR—secondary receptacle; T—tegulum; TA—tibial apophysis; Tb—tibia; v.—ventral. The details of terminology are illustrated in figures 9–23, 27, 31, 45, 49, 60, 76, 79, 144–146 and 193.

Names of some collectors are abbreviated as follows: E.A.—Dr E. M. Andreeva; V.D.—Dr V. V. Dubatolov; P.D.—Dr P. D. Dunin; A.F.—Mr A. A. Feodorov; S.I.—Mr S. I. Ibraev; A.K.—Dr A. P. Kononenko; D.L.—Dr D. V. Logunov; O.L.—Mr O. V. Lyakhov; Y.M.—Dr Yu. M. Marusik; A.N.—Mr A. B. Nenilin; A.Z.—Dr A. A. Zyuzin; S.Z.—Dr S. L. Zonshtein; S.O.—Mr S. V. Ovtchinnikov. For the leg spination the system adopted is that used by Ono (1988). The sequence of leg segments in measurement data is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are in mm.

### *Pellenes* Simon, 1876

Type species. *Aranea tripunctata* Walckenaer, 1802; designated by Simon (1876).

#### *Definition*

Medium to large spiders ranging from about 3.1 to 9.9 mm in length. Sexes similar in general body form and coloration, but females usually paler (yellow predominates) and often differ in the clypeal coloration. Body of both sexes more or less densely covered with elongated ribbed scales (figures 1–3) having both marginal (figure 3) and inferior (figure 1) spines, both being the common feature of the salticids (see Hill, 1979).

*Carapace.* Rather high (figure 8); fovea present and situated in a rounded central depression.

*Eyes.* In three rows; anterior row slightly narrower than posterior one (almost equal); middle row on midway between PLE and ALE; quadrangle length 41–53% of carapace length.

*Clypeus.* Vertical; low or medium, between 17–84% of AME diameter; coloration and shape of clypeal scale/hair covering often species-specific (e.g. figure 180).

*Chelicerae.* Usual shape; subvertical; promargin with one or two fused medium teeth (figures 5–7); retromargin with one small, sometimes poorly visible, tooth (figure 7).

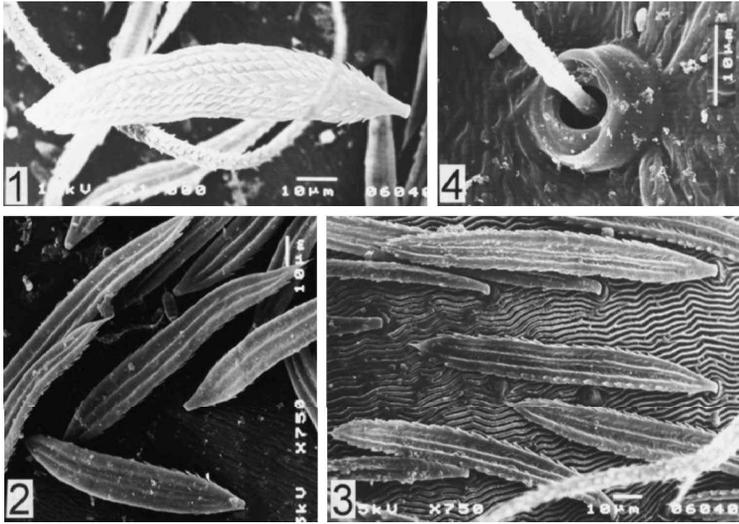
*Maxillae.* Slightly convergent.

*Labium.* Subtriangular.

*Sternum.* Oval, elongate.

*Pedichel.* Short; always not visible in dorsal view.

*Abdomen.* Elongate; dorsum usually with colour markings consisting of either a contrasting median stripe (entire or interrupted) (figures 33, 39, 66, 67, etc.) or



FIGS 1–4. *Pellenes sibiricus* Logunov and Marusik, 1994: (1) Female carapace scale, ventral view; (2) Female carapace scale, dorsal view; (3) Female abdominal scales, dorsal view; (4) Trichobothria of female metatarsus. All specimens from Tuva.

two rows of dark spots (figures 106, 110); sometimes colour markings species-specific (figure 57).

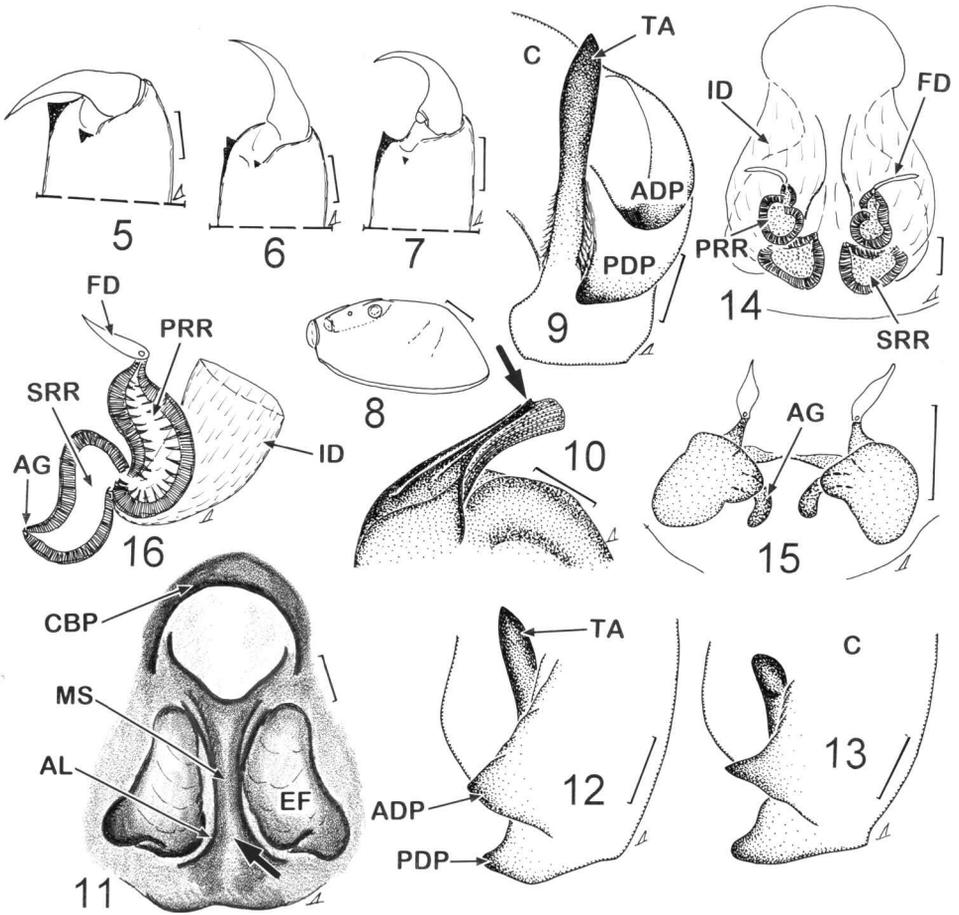
**Legs.** More or less subequally developed; legs I (often in males and sometimes in females, e.g. *Pellenes canosus*, figure 107) species-specific coloured; leg formula: III,I,IV,II or I,III,IV,II in males and IV,III,I,II or III,IV,I,II (seldom III,I,IV,II) in females; trichobothria as shown in figure 4.

**Leg spination.** (Only general for all/most species pattern is shown): Males: leg I: Fm pr. 2-3ap.; Tb v. 1-2-2ap. or 2-2-2ap.; Mt v. 2-2ap.; leg II: Fm. pr. 2-3ap.; Pt pr. 0-1-0; Tb pr. 0-1, v 1-1-2ap. or 1-2ap.; Mt v 2-2ap.; leg III: Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1 or 1-1-1 v. 2ap.; Mt 2ap.; leg IV: Pt rt. 0-1-0; Tb v 1-2ap. or 2ap.; Mt v 2ap.; Females: leg I: Fm pr. 2ap.; Tb v. 1-2-2ap. or 2-2-2ap.; Mt. v. 2-2ap.; leg II: Fm pr. 2-3ap.; Pt pr. 0-1-0; Tb pr. 0-1, v 1-1-2ap. or 1-2-2ap.; Mt v. 2-2ap.; leg III: Fm d./pr. 2-3ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1 (or rt. 1-1-1), v. 1-2ap. or 2ap.; Mt v. 2ap.; leg IV: Pt rt. 0-1-0; Tb v. 2ap. or 1-2ap.; Mt v 2ap.

**Female palp.** General form; without apical claws.

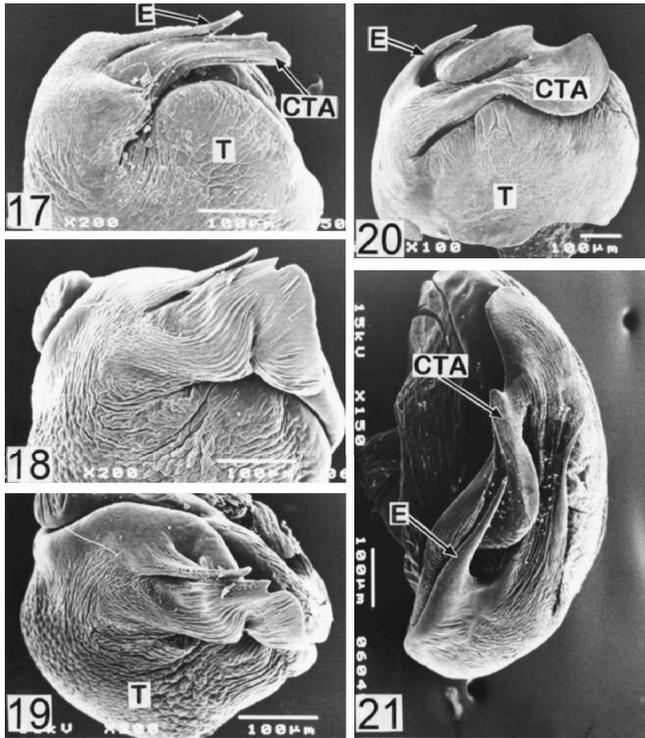
**Male palp.** Cymbium with two (figures 12, 13) or a single (figure 27) dorsolateral projections: anterodorsal (ADP) and posterodorsal (PDP); or with a cymbial ridge (figures 76, 79: CR) homologous to the PDP. Tibial apophysis always present, of three main kinds: short free (in *Pelpaucus*, figures 27, 36), long free (the majority of species, figures 72, 75, etc.) and long appressed in groove along posterolateral margin of the cymbium (in *Pellenes (s.str.)*, figure 9). Embolus needle-shaped (figures 17–21, 45); it is separated from the compound terminal apophysis (CTA) which is usually represented by a large, truncate/sharply pointed apophysis (figures 17–21).

**Female genitalia.** Five types of epigynal configuration are found: (1) epigyne consists of a raised median septum (MS) accompanied by two heavily sclerotized epigynal flaps (EF) (figure 22); (2) epigyne forms two recessed atria separated by



FIGS 5–16. Genital and somatic characters of *Pellenes* spp.: (5) Left male chelicera of *P. geniculatus* from Kyrgyzstan (Tash-Kumyr); (6) Left male chelicera of *P. dilutus* from Kazakhstan (Bairkum); (7) Left male chelicera of *P. tripunctatus* from Belgium; (8) Male carapace of *P. tripunctatus* from Belgium, lateral view; (9) Cymbium and tibial apophysis of *P. sibiricus* from Tuva, retrolateral view; (10) Embolic division of *P. limbatus* from Tuva; (11) Embolic division of *P. gobiensis* from Tuva; (12) Cymbium and tibial apophysis of *P. sibiricus* from Tuva, dorsal view; (13) Cymbium and tibial apophysis of *P. tripunctatus* from Belgium; (14) Spermathecae of *P. tripunctatus* from Belgium; (15) Spermathecae of *P. limbatus* from Tuva; (16) Schematic structure of the *Pellenes* spermathecae. Scale bars: (5, 6, 9–15) 0.1 mm; (7) 0.25 mm; (8) 0.5 mm.

a narrow median septum, with epigynal flaps poorly developed (figure 23); (3) epigyne forms a depressed atrium usually open posteriorly (figures 34, 48); (4) epigyne consists of a central blind-ending pocket (CBP) and a pair of sclerotized epigynal flaps (figures 60, 144); and (5) epigyne has an elevated median septum-pocket (SP) laterally accompanied by two atrial lips (AL) (figures 50, 51, 58). Copulatory pores (CP) are hidden beneath either the epigynal flaps (figure 22) or the atrial lips (figure 60). Despite the epigynal variability, the spermathecae show only two different configurations: two-chambered (the most common, see figures 14, 16, 145, 193) and one-chambered (figures 15, 35). The former consists of the insemination ducts [long, funnel-shaped (figures 14, 16) or short, tube-shaped



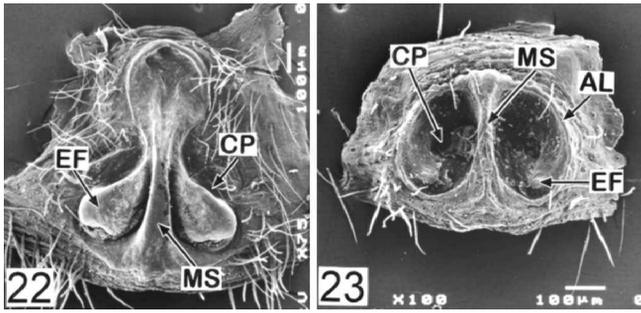
Figs 17–21. Male palps of *Pellenes* spp.: (17) Embolic division of *P. limbatus*, ventral view; (18) Embolic division of *P. ignifrons*, ventral view; (19) Embolic division of *P. ignifrons*, apical view; (20) Embolic division of *P. sibiricus*, ventral view; (21) Embolic division of *P. sibiricus*, apical view. All specimens from Tuva.

(figure 146)] and two kinds of receptacles: primary and secondary (figure 16: PRR and SRR). Fertilization ducts (FD) are associated with the PRR, while accessory glands with the SRR (figures 16, 145, 193). In many cases, receptacles are fused together and cannot be clearly distinguished (figures 63, 94, 126, etc.). The same is true for the one-chambered type of spermatheca, which consists of the short insemination ducts and a single sclerotized chamber (figures 15, 35, 188) formed by the fused PRR and SRR. In the case of one-chambered configuration, accessory glands may look like pear-shaped pendants (figure 49: AG) or be quite invisible (figure 35).

#### *Morphological /terminology notes*

Females of *Pellenes* have three different structures in the epigyne: the well developed epigynal flaps (figures 22, 60), the median septum (figures 22, 23) and the central blind-ending pocket (figures 60, 144), all have been of uncertain homology.

The epigynal flaps, as we understand them, are the elevated and sclerotized chitinous structures covering the copulatory pores and situated in close proximity to them (figures 22, 23, 60). Both position and structural criteria show the epigynal flaps found in the *Pellenes* species to be homologous to those reported for other salticid genera, e.g. *Neon*, *Dendryphantès*, *Aelurillus*, *Proszynskiana* (see Logunov, 1996: figure 17; 1998).



FIGS 22, 23. Epigynes of *Pellenes sibiricus*, ventral view (22) and *P. ignifrons*, ventral view (23). Specimens from Tuva.

The situation with the central blind-ending pocket is more complicated. There is a term, ‘epigynal wings’, proposed for the epigynal structure in *Langona* by Hęciak and Prószyński (1983: 208), who supposed that the epigynal wings of *Langona* could be homologous to those of *Aelurillus*. However, it is not the case. The ‘epigynal wings’ in *Aelurillus* are without doubt the epigynal flaps in the sense accepted above (see Logunov, 1996: figures 17, 19). At the same time, despite the epigynal wings in *Langona* being situated close to the copulatory pores, they do not cover them and resemble pockets open from behind, i.e. do not fit the above criteria for epigynal flaps. Position and structural criteria enable us to assume that the epigynal wings in *Langona* are derived from the epigynal pocket, which has been modified and displaced closer to the copulatory pores (see Hęciak and Prószyński, 1983: figures 12–18). Transformation of the epigynal pocket similar to that seen in *Langona*, i.e. forming epigynal wings, is also known in *Plexippoides* and *Yaginumaella* (see Prószyński, 1984b; Żabka, 1980). In some cases, e.g. in *Langona trifoveolata* (Lessert, 1927) and *L. bristowei* Berland et Millot, 1941, the epigynal wings do not develop, instead there is a kind of central pocket with a clearly double nature (see Hęciak and Prószyński, 1983: figures 15, 16). It is quite important, to recall Griswold’s (1987) observation that the large central pocket in *Bianor* and *Habronattus* (both genera are related to *Pellenes*) may represent a derivation through fusion of paired pockets (epigynal wings in our case).

Furthermore, in all the genera discussed above except *Aelurillus*, the typical epigynal pocket, i.e. that situated near the epigastric fold, is absent. It is also important that among the genera of the Pelleninae and Aelurillinae studied there are no cases where both structures (the epigynal wings+the epigynal pocket or the central pocket+the epigynal pocket) occur together. Thus, it is safe to assume that the central blind-ending pocket in *Pellenes*, (figures 60, 144) *Bianor*, *Habronattus*, etc. (see Griswold, 1987: figures 140–152) and the epigynal wings of *Langona*, *Plexippoides*, etc. seem to be homologous to the true epigynal pocket of many other salticids, including *Aelurillus*.

The raised median septum seen in *Pellenes* (*s. str.*) (figures 11, 22) seems to pose no difficulties in explaining its homology. Based on the epigynal structure of *Pellenes seriatus*, which shows three relevant structures (i.e. the median septum, the epigynal flaps and the central blind pocket) well-developed (figure 11), we are able to assume that the median septum is homologous to the atrial lips of other *Pellenes* (cf. figures 11 and 177) and hence other salticids (*Bianor*, *Harmochirus*, *Sitticus*, etc.). In the case of *Pellenes* (*s. str.*), the atrial lips seemed to have come into contact along the

median line, chitinized heavily and then formed a raised septum. A median groove along the septum in *Pellenes seriatus* (arrowed in figure 11), in our view, possibly indicates this manner of transformation.

Finally, usage of the term 'compound terminal apophysis' also needs an explanation. The embolic division of *Pellenes* always consists of two clearly separated parts: the embolus is doubtless homologous to the simple emboli of many other salticids, e.g. *Dendryphantès*, etc. (figures 17–21: E); and a flattened, wide sclerite named herein the compound terminal apophysis (figures 17–21: CTA). A presumption of homology of this sclerite with the true terminal apophysis (*sensu* Merret, 1963; Grasshoff, 1968; Coddington, 1990; etc.) is clearly wrong. Recently, Griswold (1987) has labelled this sclerite in *Habronattus* as the tegular apophysis and has assumed it is homologous to the median apophysis in other salticids. However, it is not so because the median apophysis seems to be correctly described only in the 'lower' salticids (i.e. those with the female palpal claws and unreduced PME) (see Wijesinghe, 1992), and has never been reported for the advanced salticids, to which *Pellenes* doubtless belongs (most probably, the median apophysis is completely fused with the tegulum). Furthermore, taking into account the complicated configuration of this sclerite in *Pellenes* (figures 20, 21), one can assume that all or most of the sclerites usually distinguished in the embolic division (lamella, terminal apophysae and even radix) could contribute to the apophysis under discussion. By this means the sclerite in *Pellenes* (as well as in *Habronattus*) is to be considered homologous to almost all the embolic division (the embolus excluded), but not to a particular sclerite. To emphasise the composite nature of the terminal apophysis in *Pellenes* (and in some other salticids) we have added the word 'compound' to its name.

#### *Diagnosis and intrageneric classification*

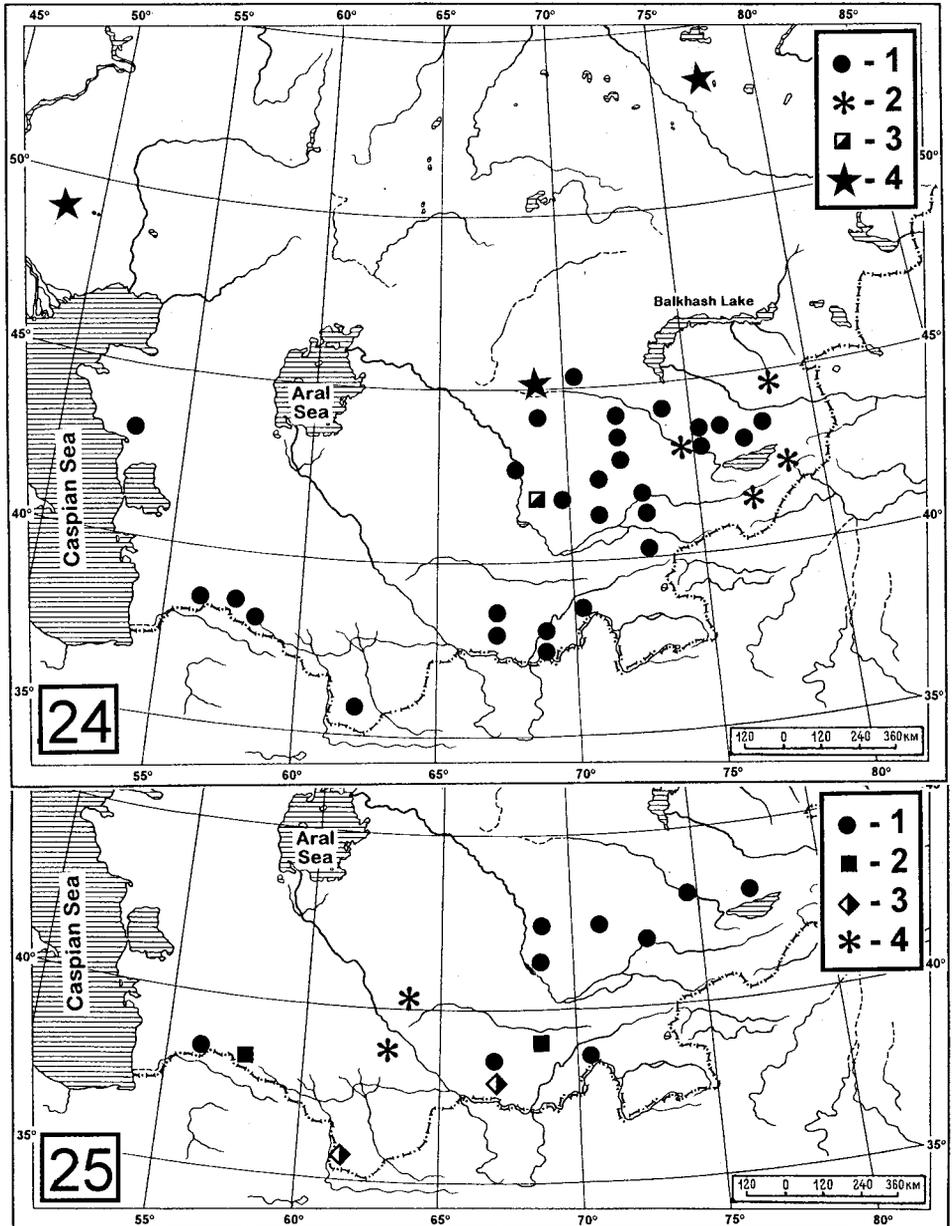
Until now, *Pellenes* has been defined by Griswold (1987) to include only the type species *Attus tripunctatus* Walckenaer, 1802 and closely related species. We have not accepted this opinion (see also Prószyński, 1990), as (1) the genitalia in all *Pellenes* (*s. lat.*) species show in principal the same configuration; (2) the genus *Pellenes* (*s. lat.*) can be easily diagnosed by both genitalic and somatic features (see below); and (3) genitalic variants used here to diagnose four subgenera show no clear somatic differences. Thus, below we propose that the genus *Pellenes* is to be defined *sensu lato*, with four subgenera included.

Considering the affinities of the genus *Pellenes*, we agree with Griswold's (1987) proposal that *Pellenes* is most closely related to *Habronattus*. From the latter genus *Pellenes* (*s. lat.*) can be easily separated by the following characters: the CTA large and broad (figures 17–21) (embolus-shaped in *Habronattus*); the embolus and the CTA separated by less than 25 degrees of arc (by more than 40 degrees of arc in *Habronattus*); cymbium with dorsolateral projections/ridge (absent in *Habronattus*); legs I in males always lack fringes (strong leg fringes usually occur in *Habronattus*); epigyne with median septum and/or epigynal flaps (both structures absent in *Habronattus*).

The genus *Pellenes* is here divided into four subgenera according to the structure of the genitalia: *Pellenes* (*s. str.*), *Pelpaucus* subgen. nov., *Pelmultus* subgen. nov. and *Pelmirus* subgen. nov. The diagnosis, species composition and short descriptions of each subgenus are discussed below under the individual subgenera (see also key to subgenera).

*Distribution*

Holarctic, Oriental and Afrotropical areas, but the bulk of species have so far been described/reported from the Mediterranean and Central Asia.



FIGS 24, 25. Collection localities of *Pellenes* spp. in Central Asia: (24) *P. geniculatus* (1), *P. sibiricus* (2), *P. borisi* (3) and *P. albopilosus* (4); (25) *P. seriatus* (1), *P. turkmenicus* (2), *P. bonus* (3) and *P. sytchevskayae* (4). One dot may represent more than one close locality.

Key to subgenera of *Pellenes*

- |   |                             |
|---|-----------------------------|
| 1 Males . . . . .   | 2                           |
| – Females . . . . .   | 5                           |
| 2 Cymbium with one/two dorsolateral projections (figures 12, 13) . . . . .                                    | 3                           |
| – Cymbium with a single dorsolateral cymbial ridge (figures 76, 79) . . . . .                                 | 4                           |
| 3 Tibial apophysis long and strong, appressed in a cymbial groove (figure 9) . . . . .                        | <i>Pellenes (Pellenes)</i>  |
| – Tibial apophysis very short or absent, never appressed in a cymbial groove (figures 27, 40) . . . . .       | <i>Pellenes (Pelpaucus)</i> |
| 4 Tips of embolus and CTA perpendicular to each other (figure 53), CTA apically rounded . . . . .             | <i>Pellenes (Pelmirus)</i>  |
| – Tips of embolus and CTA subparallel (figures 71, 74), CTA apically sharpened or truncate . . . . .          | <i>Pellenes (Pelmultus)</i> |
| 5 Central blind-ending pocket present (figures 11, 50, 60) . . . . .  | 6                           |
| – Central blind-ending pocket absent (figures 23, 24), epigynal plate forms a recessed atrium/atria . . . . . | <i>Pellenes (Pelpaucus)</i> |
| 6 Epigyne forms a raised median septum or septum-pocket (figures 22, 50) . . . . .                            | 7                           |
| – Epigyne without median septum (figure 60) . . . . .   | <i>Pellenes (Pelmultus)</i> |
| 7 Epigynal flaps present (figures 11, 22) . . . . .   | <i>Pellenes (Pellenes)</i>  |
| – Epigynal flaps absent (figure 50) . . . . .   | <i>Pellenes (Pelmirus)</i>  |

## Review of species

*Pellenes* (*s. str.*) Simon, 1876

*Type species. Aranea tripunctata* Walckenaer, 1802.

*Diagnosis*

All species included in the subgenus *Pellenes* (*s. str.*) differ in having a raised epigynal median septum in females (figures 11, 22), and the tibial apophysis appressed in the cymbial groove in males (figure 9). See also the key to subgenera.

*Species included*

*tripunctatus* Walckenaer, 1802 (*Attus*): Europe, Siberia. Figures 7, 8, 13, 14; see also Logunov and Marusik (1994: figures 6, 7, 9).

*sibiricus* Logunov and Marusik, 1994 (*Pellenes*): Siberia. Figures 1–4, 9, 12, 20–22; see also Logunov and Marusik (1994: figures 6–8).

*seriatus* Thorell, 1875 (*Attus*): S. Europe, Central Asia. For genitalia see Logunov and Marusik (1994: figure 4).

All these species have been found in Central Asia and hence are treated below.

*Distribution*

Palearctic.

*Description*

Main genitalic characters are: the cymbium has one/two well developed dorsolateral projections (figures 12, 13); the long and strong tibial apophysis appressed in the groove along posterolateral margin of cymbium (figure 9); epigynal plate forms a raised median septum (figure 22); copulatory pores are hidden beneath the strongly developed and sclerotized epigynal flaps (figure 22); insemination ducts very wide, funnel-shaped (figure 14); the spermathecae clearly two-chambered (figure 14).

***Pellenes (Pellenes) seriatus*** (Thorell, 1875)

(Figures 11, 25)

*P. seriatus*: Spassky and Shnitnikov, 1937: 296; Nenilin, 1985: 130; Zyuzin *et al.*, 1993: 280; Logunov and Marusik, 1994: 106–107, figure 4;

*P. tripunctatus*: Prószyński, 1979: 314, figure 234; Nenilin, 1984a: 24 (*pro parte*); 1984b: 139 (*pro parte*); Zonshtein, 1984: 148; Fet, 1983: 843; Mikhailov and Fet, 1994: 518.

For a complete set of references see Logunov and Marusik (1994).

*Diagnosis and description*

See Logunov and Marusik (1994).

*Distribution*

This is a S. European–Central Asian species (Logunov and Marusik, 1994). In Central Asia (figure 25), *Pellenes seriatus* has so far been recorded in Uzbekistan: Shakhrisaybz (Kharitonov, 1969; Nenilin, 1984a) and Kainar-Sai Canyon (Logunov and Marusik, 1994); Kazakhstan: Almaty env. (Spassky and Shnitnikov, 1937), Karatau Mt. Range, Sorkul Lake (Logunov and Marusik, 1994); Kyrgyzstan: Karabalty, Kok-Dzhar, Chu River Valley [Kamyshanovka], Toktogul, Arkit (Nenilin, 1984b: sub. *P. tripunctatus*; Zonshtein, 1984: sub. *P. tripunctatus*; Logunov and Marusik, 1994); and Turkmenistan: W. Kopetdagh [Koshtemir] (Logunov and Marusik, 1994).

*Habitat*

In Kyrgyzstan, the species was reported (Nenilin, 1984b: sub. *P. tripunctatus*) to occur in mountain spruce forests of the Fergansky Mt. Range.

*Material examined*

**Kazakhstan:** One male (ZMTU), Almaty, 16–28.v.1997, A. V. Gromov and S. Y. Rakov. **Uzbekistan:** Two females (PSU), Bukhara Area, Shakhrisaybz env., 14.v.1942, D. M. Fedotov; One female (PSU), same area, Yakkabagh Distr., Ishkent, 2.v.1942, D. M. Fedotov. **Tajikistan:** One male (ZMMU), Darvaz, Lyulya-Kharvi, 9.vi.1968, V. Tchikatunov.

Other material studied see Logunov and Marusik (1994).

***Pellenes (Pellenes) sibiricus*** Logunov and Marusik, 1994

(Figures 1–4, 20–22, 24)

*P. sibiricus* Logunov and Marusik, 1994: 108–110, figures 6–8.

*P. tripunctatus*: Nenilin, 1984b: 139 (*pro parte*); 1985: 130 (*pro parte*).

*P. cf. tripunctatus*: Logunov, 1992: 63.

For a complete set of references see Logunov and Marusik (1994).

*Diagnosis*

See Logunov and Marusik (1994).

*Distribution*

This is a Siberian temperate species (Logunov and Marusik, 1994). In Central Asia (figure 24), it has so far been reported from Kazakhstan: Irisu and Karkara rivers, Tekeli env.; and Kyrgyzstan: Teploklyuchenka (Logunov and Marusik, 1994).

*Habitat*

In Tuva, the species occurs in bushy clearings in deciduous and mixed forests and in sloping meadow steppes (on bushes).

*Material examined*

**Kyrgyzstan:** Two females (ISE), Naryn Mt. Range, Saltyntor Stand, 15.vii.1987, S.O. **Mongolia:** One male (ISE), Tov Aimak, Bayantsogt Somon, near Ulan-Bator, 48°07'N 100°22'E, ~1700 m a.s.l., 18.v.1997, Y.M.; six males, six females (ISE), same aimak, 48°22'N 106°18'E, ~1100 m a.s.l., 18–23.vi.1997, Y.M.; one male, two females (PSU), W. Khentei Mt. Range, Sutszunte Stand, 1.iv–15.vii.1925, P. K. Kozlov.

Other material studied see Logunov and Marusik (1994).

***Pellenes (Pellenes) tripunctatus*** (Walckenaer, 1802)

(Figures 7, 8, 14, 13, 159)

*P. tripunctatus*: Logunov and Marusik, 1994: 110–112, figures 6, 7, 9.

For a complete set of references see Logunov and Marusik (1994).

*Diagnosis and description*

See Logunov and Marusik (1994).

*Definition*

This is a European–Siberian species. In Central Asia (figure 159), it has so far been recorded only from N. Kazakhstan: Arkalyk Distr., Kokshetau Mt. (Logunov and Marusik, 1994). All other records (e.g. Fet, 1983; Nenilin, 1984a,b; Mikhailov and Fet, 1994) have proved to belong either to *P. seriatus* or to *P. sibiricus* (see above).

*Habitat*

The species occurs in bushy clearings in deciduous and mixed forests and in sloping meadow steppes (on bushes).

*Material examined*

See Logunov and Marusik (1994).

***Pelpaucus*** subgen. nov.

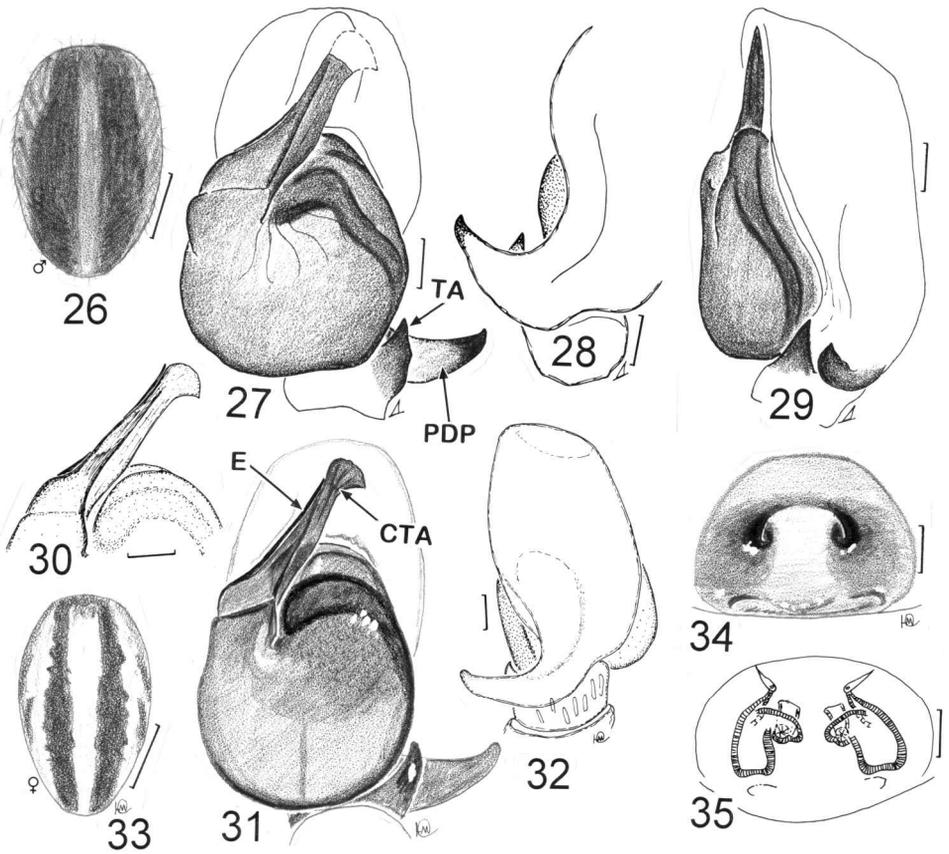
Type species. *Pellenes limbatus* Kulczyński, 1895.

*Diagnosis*

All species included differ in having a very short (cone-shaped), if any, tibial apophysis (figures 27, 36) and an apical spine on the CTA (arrowed in figures 10, 36, 40) in males, and a recessed epigynal atrium (single or paired) (figures 23, 34) and one-chambered spermathecae in females (figures 15, 35).

*Etymology*

The subgeneric epithet consists of two parts: '*Pel*' derived from the genus name *Pellenes* and '*paucus*' (Latin) meaning 'occurring in a small amount'.



FIGS 26–35. *Pellenes albopilosus* (Tyshchenko, 1965): (26) Male abdomen, dorsal view; (27) Male palp of holotype, ventral view; (28) Male palp of holotype, dorsal view; (29) Male palp of holotype, retrolateral view; (30) Embolic division, ventral view; (31) Male palp, ventral view; (32) Male palp, dorsal view; (33) Female abdomen, dorsal view; (34) Epigyne, ventral view; (35) Spermathecae, dorsal view. Specimens: (27)–(29) from Kazakhstan, Kokshetau Mt. (type locality); (26), (30)–(35) from Kazakhstan, Dzhanlybek. Scale bars: (26, 33) 0.5 mm; (27–32, 34, 35) 0.1 mm.

*Species included*

- \**ignifrons* Grube, 1861 (*Attus*), comb. nov.: Siberia, figures 18, 19, 23; see also Prószyński, 1971: figures 20–27; 1979: figure 228.
- \**limbatus* Kulczyński, 1895 (*Pellenes*), comb. nov.: Siberia, figures 10, 15, 17; see also Logunov (1992).
- \**albopilosus* Tyshchenko, 1965 (*Evarcha*), comb. nov.: N. Kazakhstan, figures 26–35.
- \**turkmenicus* sp. nov.: The Near East, Turkmenistan, the Caucasus, figures 40–49.
- \**bonus* sp. nov.: Turkmenistan, figures 36–39.
- ostrinus* Simon, 1868 (*Attus*), comb. nov.: W. Mediterranean. For genitalia see Prószyński (1984a: 102).

Species marked with an asterisk have been found in the region studied and hence are treated below.

*Distribution*

Palearctic, but further discoveries of African species are very probable.

*Description*

Main genitalic characters are: the cymbium possesses only the posterodorsal projection (long or short) (figures 27, 42); the CTA usually with an apical spine/notch (arrowed in figures 10, 36); the tibial apophysis very short or absent (figures 27, 40); epigynal plate forms a single or paired recessed/depressed atrium (figures 23, 34); median septum sometimes present (figure 23); copulatory pores are exposed in the atrium/atria (figure 34); epigynal flaps absent or poorly developed (figure 23); the spermathecae are always of one-chambered configuration (figures 15, 35).

***Pellenes (Pelpaucus) albopilosus*** (Tyshchenko, 1965) comb. nov.

(Figures 24, 26–35)

*Evarcha albopilosa* Tyshchenko, 1965: 701–702, figure 9 (female holotype, male paratype from the ZISP, examined).

*Evarcha albopilosa*: Prószyński, 1979: 307, figures 87–88.

*P. limbatus*: Nenilin, 1984a: 23 (*pro parte*); 1985: 130 (*pro parte*).

Female HOLOTYPE and male PARATYPE (ZISP) from Kazakhstan: Akmola Area, Kokshetau Mt., 7–12.vii.1957, V. P. Tyshchenko.

*Diagnosis*

*Pellenes albopilosus* is similar to both *P. bonus* and *P. turkmenicus*, but can be easily distinguished from them by absence of the distal spine on the CTA (cf. figures 31 and 36, 40) and by the structure of female genitalia, i.e. general shape of the epigynal atrium (figure 34 vs 48) and absence of the well-marked accessory glands (figure 35 vs 49).

*Distribution*

The species seems to be restricted to the steppe zone of W. Siberia, it has so far been recorded from Novosibirsk Area of Russia, Akmola and Uralsk Areas of Kazakhstan and Ukraine (Tyshchenko, 1965; Prószyński, 1979; current data). All the Central Asian localities are shown in figure 24.

*Habitat*

The species occurs in true zonal steppes of southern regions of W. Siberia and N. Kazakhstan.

*Description*

(specimens from Dzhanybek)

*Male*. Measurements. Carapace 2.00 long, 1.70 wide, 1.00 high at PLE. Ocular area 0.90 long, 1.25 wide anteriorly and 1.35 wide posteriorly. Diameter of AME 0.35. Abdomen 2.25 long, 1.70 wide. Cheliceral length 0.75. Length of leg segments: leg I: 1.00+0.63+0.75+0.50+0.50; leg II: 0.88+0.50+0.50+0.43+0.48; leg III: 1.50+0.75+0.78+0.75+0.50; leg IV: 1.15+0.50+0.63+0.69+0.48. Leg spination. Leg I: Fm d. 0-0-1; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Tb v. 0-1-0; Mt v. 2-2ap. Leg III: Fm d. 0-0-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Fm d. 0-0-1; Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Coloration: Carapace dark brown, sparsely covered with white hairs. Eye field almost black. Clypeus dark brown. Sternum, labium, maxillae and chelicerae brown to dark brown. Abdomen grey to

dark grey, dorsum with a longitudinal white stripe as shown in figure 26. Book-lung covers yellow, tinged with brown. Spinnerets brownish. All legs brown with coxae, trochanters and tarsi yellow to yellow brownish. Palp brown, its structure as in figures 27–32.

*Female.* Measurements. Carapace 2.70 long, 2.25 wide, 1.15 high at PLE. Ocular area 0.90 long, 1.35 wide anteriorly and 1.65 wide posteriorly. Diameter of AME 0.40. Abdomen 3.50 long, 2.40 wide. Cheliceral length 0.75. Length of leg segments: leg I: 1.25+0.75+1.00+0.63+0.50; leg II: 1.13+0.75+0.75+0.50+0.59; leg III: 1.75+0.95+1.00+0.88+0.75; leg IV: 1.50+0.75+1.08+1.00+0.70. Leg spination. Leg I: Fm d. 0-0-2; Tb v. 1-0; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Tb v. 1-0; Mt v. 2-2ap. Leg III: Fm d. 0-0-3; Pt rt. and rt. 0-1-0; Tb pr. and rt. 1-1 v. 2ap; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Fm d. 0-0-1; Pt pr. 0-1-0; Tb pr. 1-1, rt. 1-1, v. 2ap; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Coloration. Carapace yellow-brown (margins yellow). Eye field dark brown. All carapace densely covered with light hairs. Clypeus yellow, densely covered with white hairs. Sternum yellow. Labium, maxillae and chelicerae yellow-brown. Abdomen yellow. Dorsum with a pair of longitudinal brown stripes as shown in figure 33. Each side of abdomen with a sloping brownish stripe. Book-lung covers yellow. Spinnerets brown. Legs: trochanters, coxae and femora yellow; remaining segments yellow-brown. Palps yellow. Epigyne and spermathecae as in figures 34, 35.

#### *Material examined*

**Russia:** Three males (ISE), Novosibirsk Area, Karasuk Distr., ca. 8 km W of Troitskoye, vi–vii.1989, V. P. Pekin; One male (ZMMU), ‘Oblast’ Voiska Donskogo, Proval’ski Zavod’ [the border between Lugansk and Rostov areas], 5.vi.1908, Pyl’nov. **Kazakhstan:** Two females (ISE), Uralsk Area, Dzhanlybek, 28.v.1972, coll.?. One female (ISE), same locality, 6.vi.1984, K. G. Mikhailov; One male (ISE), same locality, 29.v.1982, K. G. Mikhailov.

#### ***Pellenes (Pelpaucus) bonus* sp. nov.**

(Figures 25, 36–39)

*Male* HOLOTYPE (ISE) from Turkmenistan: 20–25 km SE of Pulikhatum, Gezgyadyk Mt. Range, 500 m a.s.l., 15–16.iv.1993, D.L.

#### *Etymology*

The specific epithet is derived from the Latin word ‘bonus’ meaning ‘good’.

#### *Diagnosis*

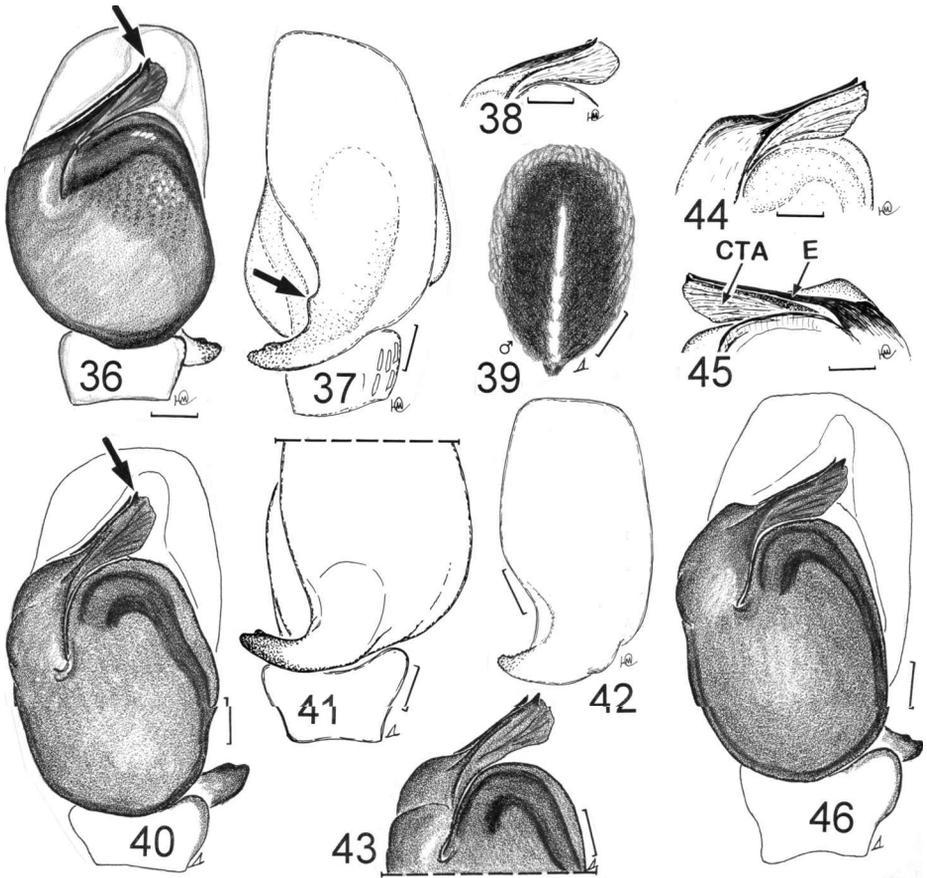
The species is most closely related to *Pellenes turkmenicus*, but differs in the shape of the distal part of the CTA and general proportions of the tegulum (cf. figures 36 and 40), as well as by the presence of a ‘ledge’ on the PDP (arrowed in figure 37).

#### *Distribution*

Turkmenistan, Gezgyadyk Mt. Range and W. Kughitang (figure 25).

#### *Habitat*

The species has been collected in juniper stands (W. Kughitangh) and pistache-woodland (= semi-savanna) (Gezgyadyk Mt. Range).



FIGS 36–46. Male genitalia of *Pellenes bonus* sp. nov. (36–39) and *P. turkmenicus* sp. nov. (40)–(46): (36), (40), (46). Male palp, ventral view; (37), (41), (42) Male palp, dorsal view; (39) Male abdomen, dorsal view; (38), (43)–(45) Embolic division, ventral view. Specimens: (36)–(39) Turkmenistan (W. Kughitang); (39) Turkmenistan (Gezgyadyk Mt. Range); (40), (41), (43) Tajikistan (Kvak); (42), (44)–(46) Turkmenistan (Firyuza). Scale bars: (39) 0.5 mm; (36–38, 40–46) 0.1 mm.

### Description

**Male (PARATYPE).** Measurements. Carapace 1.50 long, 1.25 wide, 0.75 high at PLE. Ocular area 0.75 long, 1.00 wide anteriorly and 1.10 wide posteriorly. Diameter of AME 0.35. Abdomen 1.85 long, 1.25 wide. Cheliceral length 0.75. Length of leg segments: leg I:  $0.88+0.59+0.63+0.50+0.50$ ; leg II:  $0.75+0.43+0.50+0.35+0.43$ ; leg III:  $1.13+0.58+0.65+0.58+0.63$ ; leg IV:  $1.00+0.43+0.58+0.63+0.63$ . Leg spination. Leg I: Fm d. 0-1-1-3; Tb v. 1-1; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-2; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-2; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1ap; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt pr. and rt. 0-1-0; Tb pr. 0-1-0, rt. 1-1, v. 1ap.; Mt d. 2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown, sparsely covered with white scales. Eye field almost black. Clypeus brown, covered with orange/red hairs. Same hairs around AME. Sternum, labium, maxillae and chelicerae brown to dark brown. Abdomen grey, with dorsum as in figure 39. Book-lung covers yellow-brown. Spinnerets brown.

All legs brown, with tarsi yellow to yellow brownish. Legs I often darker, dark brown. Palps brown, but palpal patellae and distal parts of femora yellow, additionally covered with white scales. Palpal structure as in figures 36–38.

*Material examined*

PARATYPES. **Turkmenistan**: One male (ISE), One male (ZMMU), W. Kughitangh, 5–7 km SE of Bazar-Depe, 1800–2500 m a.s.l., 9–19.v.1991, V.D.

***Pellenes (Pelpaucus) ignifrons*** (Grube, 1861) comb. nov.

(Figures 18, 19, 23)

*Attus ignifrons* Grube, 1861: 176 (female holotype from the WZM, examined).

*P. ignifrons*: Kulczyński, 1895: 83; Prószyński, 1971: 214–218, figures 20–27; 1976: 52, figure 270; 1979: 314, figure 228; 1982: 287; Logunov, 1992: 60.

*Diagnosis and description*

See Logunov (1992).

*Distribution*

At present, this species has been recorded from Mongolia, Tuva, SE Altai (Logunov, 1992) and Magadan area (Logunov and Marusik, 1994).

*Habitat*

In Tuva, the species can be collected in sloping meadows, shrubby steppes and shrubby grass glades (= mesophytic grasslands), where it occurs on shrubs and fallen trunks.

*Material examined*

**Mongolia**: One male (ISE), Arkhangai Aimak, Ondrer-Ulaan, Tsakhir, Chulut gorge, 48°07'N 100°22'E, ~2100 m a.s.l., 10–13.vi.1997, Y.M.

Other material studied see Logunov (1992).

***Pellenes (Pelpaucus) limbatus*** (Kulczyński, 1895) comb. nov.

(Figures 10, 15, 17)

*P. limbatus* Kulczyński, 1895: 87, figures 19–21 (male holotype from the IZW, examined).

*P. limbatus*: Prószyński, 1979: 307, figures 87–88; Logunov, 1992: 61–63, figures 6A–H.

*P. chanujnensis*: Prószyński, 1982: 285–287, figures 37–40. Synonymized with *P. limbatus* by Logunov (1992).

*Diagnosis and description*

See Logunov (1992).

*Distribution*

The species has been recorded from Siberia, Mongolia and Kyrgyzstan (Prószyński, 1982: sub. *P. chanujnensis*; Logunov, 1992).

*Habitat*

The species occurs in mountain cryo-xerophylous steppes and screes (Logunov, 1997).

*Material examined*

**Mongolia:** One male (ISE), Tov Aimak, Bayankhangai Somon, 47°20'N105°24'E, ~1200 m a.s.l., 21–25.v.1997, Y.M.; Two males (ISE), same aimak, Gurvanbulak Somon, Khokh-Nuur (Lake), 47°32'N 98°32'E, ~2600 m a.s.l., 7–10.vi.1997, Y.M.; One male (ISE), Overkhangai Aimak, Zuunbayan-Ulaan Somon, Zantyn Davaa, 46°43'N 102°51'E, ~2000 m a.s.l., 14–18.vi.1997, Y.M.

Other material studied see Logunov (1992).

***Pellenes (Pelpaucus) turkmenicus* sp. nov.**

(Figures 25, 40–49)

*P. limbatus*: Andreeva, 1975: 339; 1976: 85, figures 101–102; Ovtsharenko and Fet, 1980: 445 (all misidentifications).

Male HOLOTYPE (ZMMU) from Tajikistan: Gissarskiy Mt. Range, Kondara Canyon, Kvak, 1–11.vi.1967, E.A.

*Etymology*

We assume that the species is more widely distributed within Turkmenistan than it is currently known, this fact being expressed in its name.

*Diagnosis*

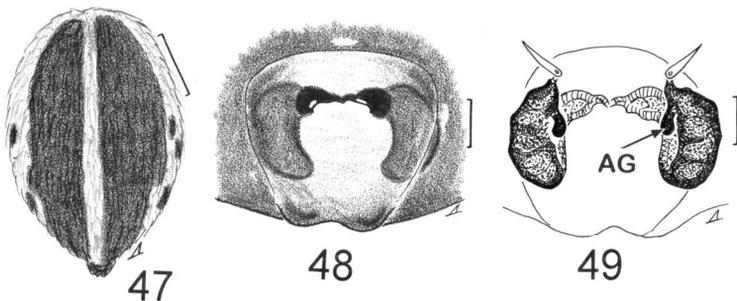
See comments under 'Diagnosis' of *Pellenes albopilosus* and *P. bonus*.

*Distribution*

Turkmenistan, Tajikistan and Daghestan. Occurrence of *Pellenes turkmenicus* in the Near East is very probable. All the Central Asian localities are shown in figure 25.

*Habitat*

In Turkmenistan, this species was collected in shibliak (semidesert belt of C. Kopetdagh) and seemed to be listed by Ovtsharenko and Fet (1980: sub. *P. limbatus*) for the pistache-woodlands with *Pistacea vera*; in Tajikistan, it was reported (Andreeva, 1976: sub. *P. limbatus*) to occur in herb-grass formations of the arboreal-shrubby vegetation belt.



FIGS 47–49. Female genitalia of *Pellenes turkmenicus* sp. nov. (paratype): (47) Female abdomen, dorsal view; (48) Epigyne, ventral view; (49) Spermathecae, dorsal view. Specimen from Daghestan (Derbent). Scale bars: (47) 0.5 mm; (48, 49) 0.1 mm.

### Notes

All the records of *Pellenes limbatus* from Tajikistan (Andreeva, 1975, 1976) and Turkmenistan (Prószyński, 1979; Ovtsharenko and Fet, 1980; Neniin, 1984a, 1985; Mikhailov and Fet, 1994) actually belong to either *P. turkmenicus* or *P. bonus*.

### Description

**Male.** (HOLOTYPE). Measurements. Carapace 2.43 long, 1.73 wide, 1.00 high at PLE. Ocular area 1.13 long, 1.35 wide anteriorly and 1.39 wide posteriorly. Diameter of AME 0.40. Abdomen 2.18 long, 1.83 wide. Cheliceral length 0.88. Cheliceral height 0.15. Length of leg segments: leg I: 1.35+0.88+1.00+0.75+0.50; leg II: 1.06+0.63+0.63+0.50+0.40; leg III: 1.50+0.83+0.85+0.83+0.50; leg IV: 1.28+0.63+0.71+0.81+0.50. Leg spination. Leg I: Fm d. 0-1-1-1, pr. 2ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-1, pr. 2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-1-1-1, pr. 0-0-1-2ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm d. 0-1-1-1; Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 1-2ap.; Mt pr. 2ap., rt. 1-1-2ap., v. 1-2ap. Coloration. Carapace dark brown, with black around eyes and two yellow spots behind PLEs. Carapace sparsely covered with white scales. Clypeus yellowish brown, sparsely covered with red scales; same scales around AMEs. Sternum brown, with sparse white hairs. Maxillae, labium and chelicerae dark brown. Abdomen: dorsum brown, with longitudinal yellow stripe; sides yellowish brown; venter yellow. Book-lung covers yellow. Spinnerets dark brown. Legs II–IV yellowish brown, but coxae III–IV light yellow. Leg I darker than other legs (dark brown). Palpal structure as in figures 40–46.

**Female.** (from Daghestan). Measurements. Carapace 2.90 long, 2.30 wide, 0.63 high at PLE. Ocular area 1.30 long, 1.48 wide anteriorly and 1.73 wide posteriorly. Diameter of AME 0.45. Abdomen 4.20 long, 2.90 wide. Cheliceral length 1.08. Clypeal height 0.38. Length of leg segments: leg I: 1.60+0.95+0.88+0.58+0.43; leg II: 1.30+0.73+0.70+0.53+0.38; leg III: 1.98+0.90+0.88+0.90+0.55; leg IV: 1.60+0.80+0.88+0.95+0.55. Leg spination. Leg I: Fm pr. 2ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm pr. 2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 3ap.; Pt pr. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Coloration. Carapace dark brown, sparsely covered with elongated white scales. Black around eyes. Clypeus brown, densely covered with white hairs. Sternum, maxillae and labium brown. Chelicerae dark brown. Abdomen greyish yellow, dorsum as in figure 47. Book-lung covers yellow. Spinnerets brown. Leg I dark brown. Other legs yellow-brown. Palps yellow, but coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 48, 49.

### Material examined

**PARATYPES:** **Tajikistan:** One male (ZMMU), together with HOLOTYPE. **Turkmenistan:** One male (ISE), C. Kopetdagh, Solyukly, 16–23.v.1980, G. T. Kuznetsov; One male (ISE), C. Kopetdagh, ca. 5 km N of Firyuza, 20.v.1987, V.D. **Russia:** One female (ISE), Daghestan, Derbent, 20.v.1984, P.D.

### *Pelmirus* subgen. nov.

Type species: *Pellenes dilutus* Logunov, 1995.

*Diagnosis*

All species included differ in the following characters: the embolus and the CTA are perpendicularly orientated to each other (figure 53) in males, and in females the epigynal plate has an elevated central blind-ending pocket (the so-called median septum-pocket) (figures 50, 58).

*Etymology*

The subgeneric epithet consists of two parts: '*Pel*' derived from the genus name *Pellenes* and '*mirus*' (Latin) meaning 'surprising'.

*Species included*

- \**dilutus* Logunov, 1995 (*Pellenes*), comb. nov.: Central Asia. For genitalia see Logunov (1995: figures 1–4, 8–11: male sub. *P. tesin*).
- \**pulcher* Logunov, 1995 (*Pellenes*), comb. nov.: N. Kazakhstan, Tuva and Mongolia. Figures 50–52. For the male genitalia see Logunov (1995: figures 5–7).
- \**sychevskayae* sp. nov.: Central Asia: Repetek. Figures 53–59.
- hedjazensis* Prószyński, 1993 (*Pellenes*), comb. nov.: Saudi Arabia. For genitalia see Prószyński (1993: figures 32–36).

Species marked with an asterisk have been found in the region studied and hence are treated below.

*Distribution*

The Near East and Central Asia. Occurrence in Mediterranean and African regions is very probable.

*Description*

Main genitalic characters are: the cymbium with the well developed cymbial ridge (no projection present) (figure 54); the tibial apophysis free and rather long (figure 55); the embolus and the CTA perpendicular to each other (figure 53); epigyne forms an elevated (median septum-shaped) central blind-ending pocket (figures 50, 51); epigynal flaps absent; copulatory pores are hidden beneath lateral lips of atrium (figures, 50, 58); insemination ducts wide (funnel-shaped) (figures 52, 59); the spermathecae are clearly of two-chambered configuration (figure 59).

***Pellenes (Pelmirus) dilutus*** (Logunov, 1995) comb. nov.  
(Figures 6, 159)

- P. dilutus* Logunov, 1995: 237–238, figures 1–4. (female holotype from the ISE, examined).
  - P. tesin* Logunov, 1995: 240, figures 8–11 (male holotype from the ISE, examined).
- Synonymized with *P. dilutus* by Logunov and Rakov (in press).

*Diagnosis*

See Logunov (1995) and comments under 'Diagnosis' of *Pellenes pulcher* and *P. sychevskayae*.

*Distribution*

Central Asia only (figure 159), where it has so far been reported from Kazakhstan: Chiganak, Karamola and Bairkum (Logunov, 1995; Logunov and Rakov, in press; current study); and Turkmenistan: Tashauz (Logunov, 1995: sub. *P. tesin*).

*Description*

See Logunov (1995).

*Material examined*

**Kazakhstan:** One male (ISE), S-Kazakhstan Area, Kyzylkum Desert, Karamola Mt., 14–18.v.1995, A.Z.; One male (ISE), same area and desert, ca. 37 km WSW of Bairkum, 10–11.v.1995, A.Z.

Other material studied see Logunov (1995) and Logunov and Rakov (in press).

***Pellenes (Pelmirus) pulcher* (Logunov, 1995) comb. nov.**  
(Figures 50–52)

*P. pulcher* Logunov, 1995: 238–240, figures 5–7.

*Diagnosis*

Males have already been diagnosed by Logunov (1995). Females, like males, are similar to *Pellenes dilutus*, but clearly differ in the shape of the median septum-pocket (figure 50; cf. Logunov, 1995: figure 1). See also comments under ‘Diagnosis’ of *P. sytchevskayae*.

*Distribution*

Tuva, N. Kazakhstan and Mongolia.

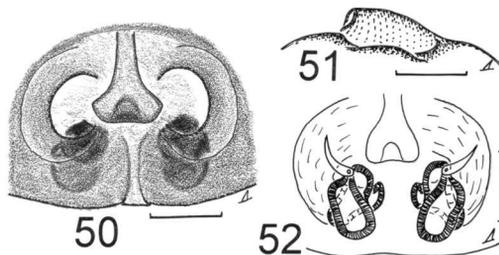
*Habitat*

In Tuva and Mongolia, the species was collected in desert nanophanerophyte steppe (= tar steppe) with *Nanophyton erinaceus*.

*Description*

*Male.* See Logunov (1995).

*Female* (from Tuva, Ubsu-Nur Lake). Measurements. Carapace 1.83 long, 1.33 wide, 0.93 high at PLE. Ocular area 0.95 long, 1.08 wide anteriorly and 1.24 wide posteriorly. Diameter of AME 0.38. Abdomen 2.93 long, 2.03 wide. Cheliceral length 0.50. Clypeal height 0.25. Length of leg segments: leg I: 1.00+0.58+0.63+0.45+0.38; leg II: 0.78+0.50+0.48+0.35+0.30; leg III: 1.33+0.65+0.63+0.63+0.45; leg IV: 1.08+0.58+0.60+0.68+0.40. Leg spination. Leg I: Fm d. 0-1-1-2ap.; Tb v. 2-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-2ap.;



FIGS 50–52. Female genitalia of *Pellenes pulcher* Logunov, 1995: (50) Epigyne, ventral view; (51) Epigyne, ventral view; (52) Spermathecae, ventral view. Specimen from Tuva, Ubsu-Nur Lake. Scale bars: 0.1 mm.

pr. 0-0-1-1ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1-2ap.; Mt pr. and rt. 2-2ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb pr. and rt. 1-1, v. 1-2ap.; Mt pr. 2-2ap., rt. 1-1-2ap., v. 2ap. Coloration. Carapace yellow-brown, sparsely covered with light scales. Black around eyes. There are two yellow elongated patches behind PLEs, both covered with white scales. Clypeus yellow, densely covered with white hairs. Sternum: brown margins and yellow medially. Labium brown. Maxillae and chelicerae yellow. Abdomen dark yellow-grey. Dorsum and sides with three sloping yellow lines in the posterior half of the abdomen. Book-lung covers and spinnerets yellow, tinged with grey. All legs brown-yellow, with brownish sides to femora and tibiae (especially well marked in legs I). Epigyne and spermathecae as in figures 50–52.

#### *Material examined*

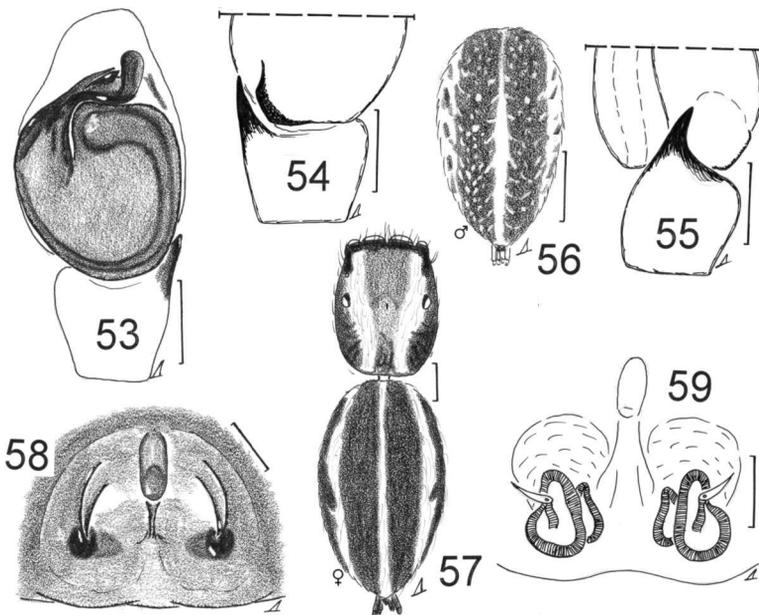
**Russia:** Two females (ISE), Tuva, NE shore of Ubsu-Nur Lake, 50°40'N 92°58'E, 760 m a.s.l., 18.vii.1993, D.L.; One male, three females (ISE), same locality, 14.vi.1995, D.L. **Mongolia:** Two females (ISE), Omnogov Aimak, Mandal-Ovoo Somon, 44°52'N 104°06'E, ~1140 m a.s.l., 26.v.1997, Y.M.

Other material studied see Logunov (1995).

#### *Pellenes (Pelmirus) sytchevskayae* sp. nov.

(Figures 25, 53–59)

Male HOLOTYPE (ISE) from Uzbekistan: Bukhara Area, ca. 1 km NE of Gazli, 15.v.1994, A.Z.



FIGS 53–59. *Pellenes sytchevskayae* sp. nov.: (53) Male palp, ventral view; (54) Male palp, dorsal view; (55) Male palp, retrolateral view; (56) Male abdomen, dorsal view; (57) Female body coloration, dorsal view; (58) Epigyne; (59) Spermathecae. Specimens: male holotype from Uzbekistan (Gazli), female paratype from Turkmenistan (Repetek). Scale bars: (56, 57) 0.5 mm; (53–55, 58, 59) 0.1 mm.

### Etymology

The species is named after Dr V. I. Sytchevskaya, the well-known Russian arachnologist, who devoted several of her works to the Central Asian spider fauna and whose material was also used for the description of this species.

### Diagnosis

Females of *Pellenes sytchevskayae* can be easily separated from those of *P. dilutus* and *P. pulcher* by the shape of the median septum-pocket (cf. figures 58 and 50, see also Logunov, 1995: figure 1). Males of the new species are closer to those of *P. pulcher* (figures 53–55; cf. Logunov, 1995: figures 5–7), but differ in the shape and position of the CTA, as well as in body coloration (*P. pulcher* lacks a longitudinal stripe on the dorsum).

### Distribution

NE Turkmenistan and S. Uzbekistan (figure 25).

### Habitat

The species is a dweller of sandy desert (barkhan sands and sand dunes).

### Description

*Male* (HOLOTYPE). Measurements. Carapace 1.45 long, 1.08 wide, 0.70 high at PLE. Ocular area 0.70 long, 0.80 wide anteriorly and 0.93 wide posteriorly. Diameter of AME 0.28. Abdomen 1.63 long, 1.00 wide. Cheliceral length 0.43. Clypeal height 0.13. Length of leg segments: leg I: 0.91+0.55+0.63+0.40+0.30; leg II: 0.68+0.40+0.35+0.38+0.28; leg III: 1.13+0.55+0.58+0.40+0.55; leg IV: 0.88+0.40+0.50+0.53+0.40. Leg spination. Leg I: Fm d. 0-1-1-2; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-3; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-3; pr. 0-0-1-1; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1-2ap.; Mt pr. and rt. 2-2ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 1-2ap.; Mt pr. and rt. 1-2ap., v. 2ap. Coloration. Carapace yellow with brownish veins on thoracal part. Black around eyes. Carapace sparsely covered with light scales. Clypeus yellow, densely covered with white hairs. Sternum yellow, with a thin brown piping. Maxillae, labium and chelicerae yellow. Abdomen yellow, with a pair of longitudinal brown bands as in figure 56. Book-lung covers and spinnerets yellow. Leg I yellow, but pro- and retrolateral sides of segments brown. Legs II–IV yellow, but tinged with grey on pro- and retrolateral sides of segments. Palps yellow, with brown bulbus. Palpal structure as in figures 53–55.

*Female* (PARATYPE). Measurements. Carapace 2.00 long, 1.45 wide, 1.03 high at PLE. Ocular area 1.05 long, 1.13 wide anteriorly and 1.25 wide posteriorly. Diameter of AME 0.36. Abdomen 2.88 long, 1.88 wide. Cheliceral length 0.65. Clypeal height 0.14. Length of leg segments: leg I: 1.18+0.68+0.83+0.58+0.35; leg II: 0.88+0.58+0.63+0.45+0.38; leg III: 1.33+0.65+0.93+0.78+0.48; leg IV: 1.40+0.78+0.80+0.88+0.58. Leg spination. Leg I: Fm d. 0-1-1-2; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-2; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-3; pr. 0-0-1-1; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. and rt. 2-2ap., v. 2ap. Leg IV: Fm d. 0-1-1-1; Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 1-2ap.; Mt pr. 1-2ap., rt. and v. 2ap. Coloration. Carapace yellow-brown, with dark brown veins on thoracal part. Black around eyes. There are two longitudinal yellow stripes along ALE-PLE line, covered with white scales (figure 57).

Clypeus yellow, densely covered with white hairs. Sternum yellow, with a thin brown piping. Maxillae, labium and chelicerae yellow. Abdomen yellow-grey, with two paired brown longitudinal bands on dorsum and sides (figure 57). Book-lung covers and spinnerets yellow. Leg I brown, with a yellow dorsal stripe on femur. Legs II–IV yellow, with brownish patches on pro- and retrolateral sides of femora and tibiae. Palps yellow, but coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 58, 59.

#### *Material examined*

PARATYPES: **Turkmenistan:** One female (ISE), Repetek, 3.v.1981, V. A. Krivokhatski; One female (ZMMU), same locality, 25.v.1929, V. I. Sytchevskaya.

#### *Pelmultus* subgen. nov.

Type species: *Attus geniculatus* Simon, 1868.

#### *Diagnosis*

All species included can be easily separated from the other subgenera in having the central blind-ending pocket always accompanied by the heavily sclerotized epigynal flaps in females (figures 60, 144), and subparallel tips of the embolus and the CPA in males (figures 71, 74, 77, 80). See also key to subgenera.

#### *Etymology*

The subgeneric epithet consists of two parts: ‘*Pel*’ derived from the genus name *Pellenes* and ‘*multus*’ (Latin) meaning ‘numerous’.

#### *Species included*

- \**allegrii* Caporiacco, 1935 (*Pellenes*), comb. nov.: Central Asia. Figures 60–70, 80–82, 89, 90, 92.
- \**amazonka* sp. nov.: Central Asia. Figures 93–97, 159.
- arcigerus* Walckenaer, 1837 (*Attus*), comb. nov.: S. Europe. For genitalia see Simon (1937: figures 1996–1998) and Prószyński (1976: figure 275).
- \**badkhyzicus* sp. nov.: Central Asia: Badkhyz. Figures 91, 98–103.
- \**borisi* sp. nov.: Central Asia: S. Kazakhstan. Figures 24, 104–106.
- \**brevis* Simon, 1868 (*Attus*), comb. nov.: W. Mediterranean. Figures 77–79, 87, 88, 160–162, 192–196, 206, 207, 209.
- \**canosus* Simon, 1937 (*Pellenes*), comb. nov.: France. Figures 107–110.
- dahl* Lessert, 1915 (*Pellenes*), comb. nov.: Uganda. For genitalia see Prószyński (1984a: figures 103–104).
- \**denisi* Schenkel, 1963 (*Pellenes*), comb. nov.: NW China. For genitalia see Wesołowska (1981: figures 68, 69).
- \**epularis* O. P.-Cambridge, 1872 (*Salticus*), comb. nov.: The Near East, Central Asia. Figures 91, 111–130.
- \**geniculatus* Simon, 1868 (*Attus*), comb. nov.: Mediterranean, Central Asia. Figures 5, 24, 131–153.
- \**gobiensis* Schenkel, 1936 (*Pellenes*), comb. nov.: S. Siberia, Mongolia and NW China. For genitalia see Logunov (1992: figure 5a–h).
- hadaensis* Prószyński, 1993 (*Pellenes*), comb. nov.: Saudi Arabia. For genitalia see Prószyński (1993: figures 28–31).
- \**karakumensis* sp. nov.: Central Asia: Repetek. Figures 91, 154–158.
- limatus* Peckham and Peckham, 1901 (*Pellenes*), comb. nov.: N. America. For genitalia see Peckham and Peckham (1901: plate I, figure 7).

*logunovi* Marusik, Hippa and Koponen, 1996 (*Pellenes*), comb. nov.: S. Siberia. For genitalia see Marusik *et al.* (1996: figures 75–80).

*minimus* Caporiacco, 1933 (*Pellenes*), comb. nov.: Africa. For genitalia see Prószyński (1987: 75).

\**nigrociliatus* Simon in L. Koch, 1875 (*Attus*), comb. nov.: Europe, Central Asia. Figures 74–76, 92, 172–179.

\**pamiricus* sp. nov.: E-Pamir. Figures 91, 180–188.

*perexcultus* Clarck and Benoit, 1977 (*Pellenes*), comb. nov.: Africa. For genitalia see Clarck and Benoit (1977: figures 42, 43).

\**pseudobrevis* sp. nov.: Central Asia. Figures 159, 163–165, 189–191, 208, 210–213.

\**tocharistanus* Andreeva, 1976 (*Pellenes*), comb. nov.: Central Asia. Figures 71–73, 83, 84, 159, 166–171, 197–205.

Species marked with an asterisk are found in the region studied and hence are treated below.

### Distribution

Holarctic and Afrotropical Region.

### Description

Main genitalic characters are: the cymbial ridge always present (figures 73, 76, etc.), but sometimes poorly developed (figure 79); the tibial apophysis long and free (figures 72, 75); tips of the embolus and the CTA subparallel (figures 71, 74); central blind-ending pocket always present, but never elevated (figures 60, 144); epigynal flaps (heavily sclerotized) always present (figures 93, 128); copulatory pores are hidden beneath the epigynal flaps; insemination ducts narrow and short, not seen in dorsal view (figures 127, 145–148); the spermathecae is clearly of two-chambered configuration (figures 145, 193), but receptacles often fused forming a single-chambered type of spermatheca (figures 188, 190).

### ***Pellenes (Pelmultus) allegrii*** (Caporiacco, 1935) comb. nov. (Figures 60–70, 80–82, 89, 90, 92)

*P. allegrii* Nenilin, 1985: 130.

*P. calvus*: Nenilin, 1984b: 134; 1985: 130 (*pro parte*).

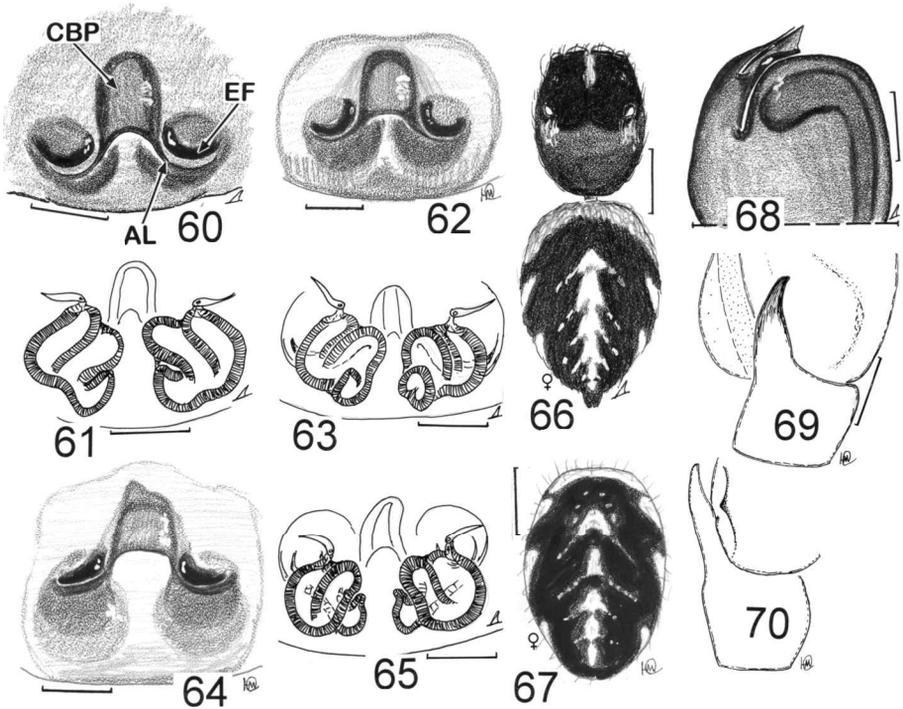
*P. nigrociliatus*: Nenilin, 1984a: 23 (*pro parte*); 1984b: 134 (*pro parte*).

### Diagnosis

*Pellenes allegrii* is most closely related to *P. brevis* and *P. pseudobrevis*. From the former species females of *P. allegrii* can be easily distinguished by size and shape of the CBP and arrangement of receptacles (figures 60–65 vs 192–195), and the males by the longer embolus and CTA and the oblique tibial apophysis (figures 77–79 vs 80–82). From *P. pseudobrevis* it can be separated by the female genitalia (the CBP in *P. allegrii* is protuberant and of distinct shape, see figures 60–65 vs 189, 190) and fine structure of the embolic division, namely the visibly cut apex of the CTA in *P. allegrii* (cf. figures 68, 70 and 163). Body coloration of males (especially abdominal colour markings) (cf. figures 89 and 88, 207, 208) and their first legs (figure 87 vs 90) are also diagnostic.

### Distribution

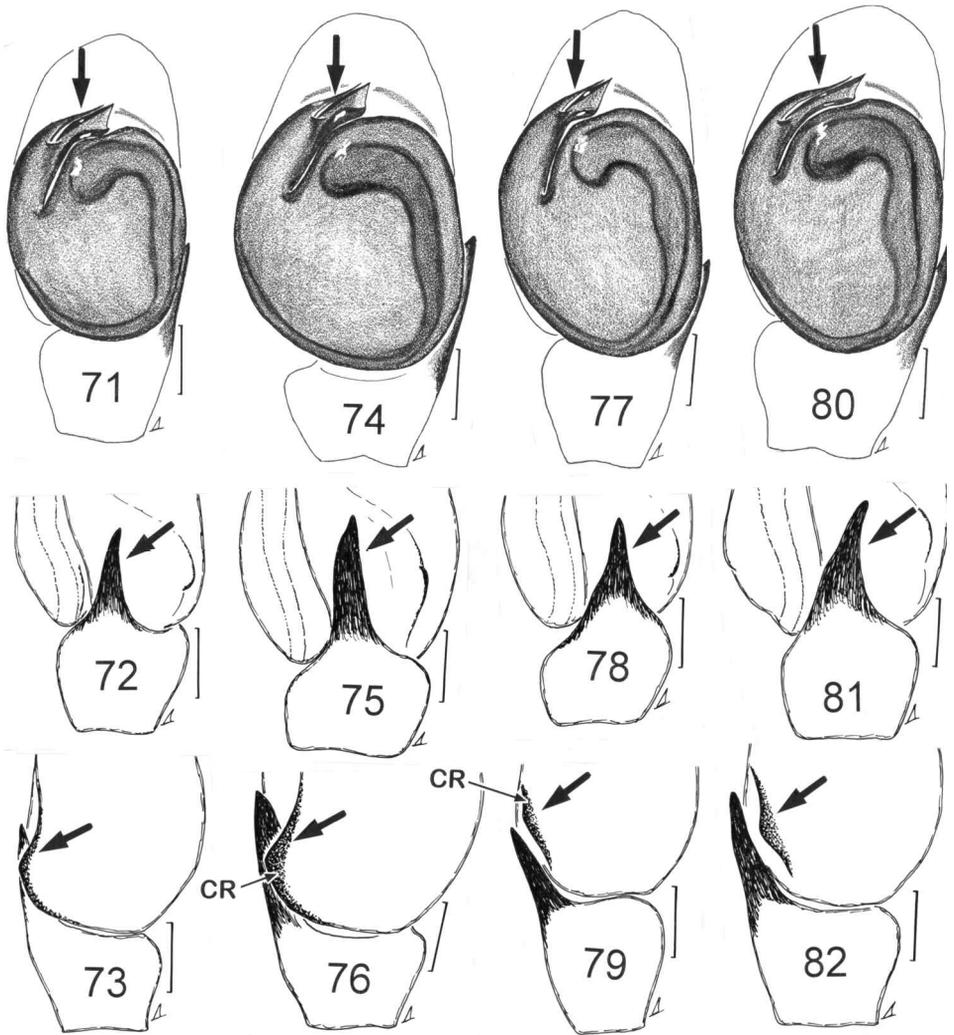
The species displays a Central Asian distributional pattern. In Central Asia (figure 92), it has been hitherto recorded by Nenilin (1984b: sub. *Pellenes calvus* and *P. nigrociliatus*; 1985) from Kyrgyzstan: Chon-Uryukty and Kok-Sai.



FIGS 60–70. *Pellenes allegrii* (Caporiacco, 1935): (60), (62), (64) Epigyne, ventral view; (61), (63), (65), Spermathecae, dorsal view; (66) Body coloration; (67) Female abdomen coloration; (68) Embolic division, ventral view; (69) Tibial apophysis, retrolateral view; (70) Tibial apophysis, dorsal view. Specimens: (60), (61) Kazakhstan, Kokpekty; (62), (63), (66) Kyrgyzstan, Chon-Uryukty; (64), (65), (67) Kyrgyzstan, Talass; (68) Kyrgyzstan, Sary-Bulak; (69), (70) Kyrgyzstan, near Bishkek. Scale bars: (60–65, 68–70) 0.1 mm; (66, 67) 0.5 mm.

### Description

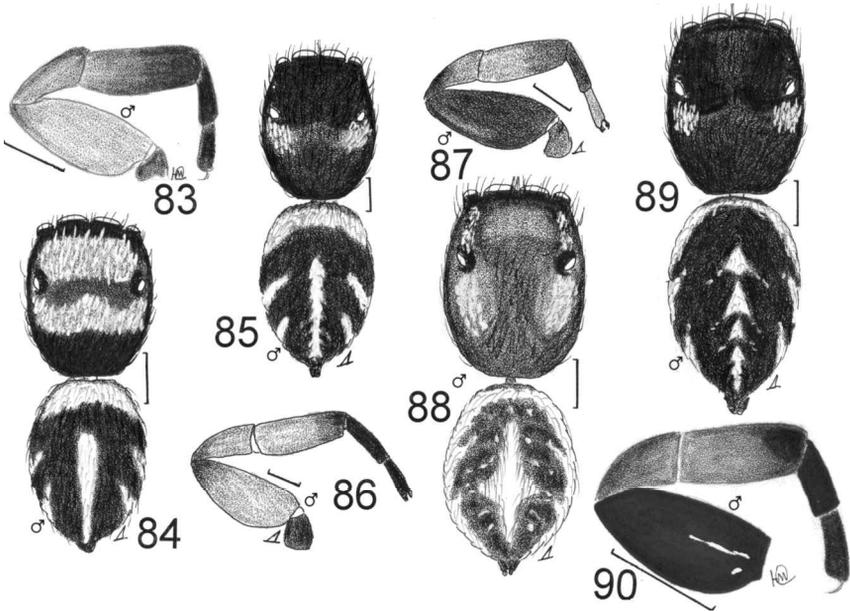
**Male** (from Kazakhstan, Fabrichnyi). Measurements. Carapace 2.08 long, 1.58 wide, 1.00 high at PLE. Ocular area 1.00 long, 1.15 wide anteriorly and 1.35 wide posteriorly. Diameter of AME 0.40. Abdomen 2.28 long, 1.58 wide. Clypeal height 0.15. Cheliceral length 0.75. Length of leg segments: leg I:  $1.35+0.83+1.00+0.66+0.45$ ; leg II:  $0.88+0.50+0.53+0.40+0.33$ ; leg III:  $1.40+0.68+0.75+0.63+0.45$ ; leg IV:  $1.13+0.50+0.60+0.60+0.48$ . Leg spination. Leg I: Fm d. 0-1-1-3ap.; Pt pr. 0-1-0; Tb pr. 1-1, v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-3ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2ap. Leg IV: Fm d. 0-1; Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1-1, v. 2ap.; Mt pr. 1-2ap., rt. 1-1-2ap., v. 2ap. Coloration. Carapace dark brown, with a pair of small white patches of scales behind PLEs (figure 89). Eye field black. Red scales around AMEs. Clypeus brown, with a thin transverse white line as in *Pellenes nigrociliatus* (see figure 175). Sternum, maxillae and labium brown to dark brown. Chelicerae dark brown, anteriorly with six vertical white lines of scales (as in *P. nigrociliatus*, see figure 175). Abdomen grey-brown, but dorsum black with white colour markings as in figure 89. Book-lung covers grey yellowish. Spinnerets brown. Leg I (figure 90):



FIGS 71–82. Male palps of *Pellenes tocharistanus* Andreeva, 1976 from Tajikistan (71)–(73), *P. nigrociliatus* (Simon in L. Koch, 1875) from the Crimea (lectotype of *P. tauricus*) (74)–(76), *P. brevis* (Simon, 1868) from Poland (77–79) and *P. allegrii* (Caporiacco, 1935) from Kazakhstan (Almaty Area) (80)–(82): (71), (74), (77), (80) Ventral view; (72), (75), (78), (81) Retrolateral view; (73), (76), (79), (82) Dorsal view. Scale bars: 0.1 mm.

coxa, trochanter and femur dark brown; patella, metatarsus and tarsus yellow-brown; tibia yellow basally and brown distally. Other legs brown, but femora basally-retrolaterally yellow. Palp yellow brownish, its structure as in figures 68–70, 80–82.

*Female* (from Kyrgyzstan, Chon-Uryukty). Measurements. Carapace 2.25 long, 1.50 wide, 0.95 high at PLE. Ocular area 0.75 long, 1.25 wide anteriorly and 1.35 long posteriorly. Diameter of AME 0.38. Abdomen 3.25 long, 2.15 wide. Cheliceral length 0.75. Length of leg segments: leg I: 1.00+0.75+0.88+0.50+0.50;

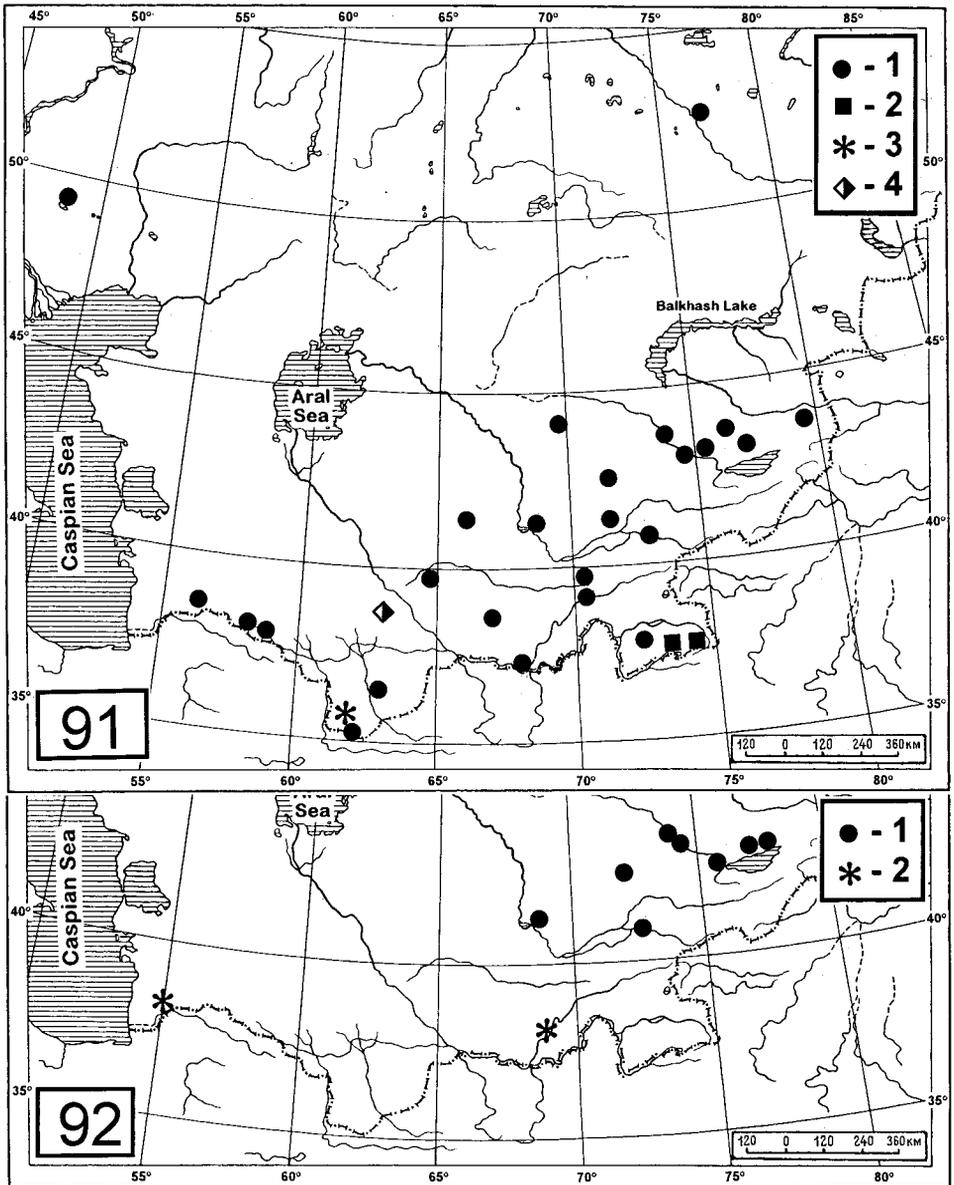


FIGS 83–90. Male body and leg I coloration of (83)–(84) *Pellenes tocharistanus* Andreeva, 1976 from Tajikistan, (85)–(86) *P. nigrociliatus* (Simon in L. Koch, 1875) from Turkmenistan (SW Kopetdagh); (87)–(88) *P. brevis* (Simon, 1868) from Poland, (89)–(90) *P. allegrii* (Caporiacco, 1935) from Kazakhstan (Almaty Area). Scale bars: 0.5 mm.

leg II:  $0.88 + 0.50 + 0.63 + 0.38 + 0.43$ ; leg III:  $1.63 + 0.75 + 0.75 + 0.63 + 0.63$ ; leg IV:  $1.25 + 0.50 + 0.79 + 0.75 + 0.63$ . Leg spination. Leg I: Fm d. 0-0-2; Tb v. 1-2; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Pt pr. 0-1-0; Tb v. 0-1-0; Mt v. 2-2ap. Leg III: Fm d. 0-0-3; Pt rt. 0-1-0; Tb pr. and rt. 1-1; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Tb rt. 1-1, v. 1-2ap.; Mt d. 2-2ap., pr. and rt. 2ap., v. 2-2ap. Coloration. Carapace dark brown. Eye field black, with a short white stripe of scales behind AMEs (figure 66). Also, a pair of small white patches behind PLEs. Clypeus brown, densely covered with white hairs. Sternum, labium, maxillae and chelicerae brown to dark brown. Abdomen: dorsum as shown in figures 66, 67; sides and venter yellow-grey, with a pair of sloping white lines on each side. Book-lung covers greyish yellow. Spinnerets brown. All legs brown, but coxae and trochanters II–IV yellowish. Palps yellow to orange, with coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 60–65.

#### *Material examined*

**Kazakhstan:** One male (ZMTU), Almaty, 16–28.v.1997, A. V. Gromov and S. Y. Rakov; Two males (ISE), Almaty Area, Zhambyl Distr., Fabrichnyi, 27.iv.1997, A. Ponomarenko and A.Z.; One male (ISE), Zhambyl Area, Chu Distr., Aspara,  $43^{\circ}23'N$   $73^{\circ}37'E$ , 22–28.v.1997, A. V. Gromov and S. Y. Rakov. **Kyrgyzstan:** Two females (ISE), Issyk-Kul' Area, Kungei-Alatoo Mt. Range, Chon-Uryukty Stand, 2000–2900 m a.s.l., 22.vi.1989, S.O.; One female (ISE), same locality, 17.viii.1982, S.O.; One female (ZMMU, det. hitherto by A.N. as *P. nigrociliatus*), Talasskiy Mt. Range, Kok-Sai River, 2.viii.1979, S.Z.; Two females (ISE), Chu



FIGS 91, 92. Collection localities of *Pellenes* spp. in Central Asia: (91) *P. epularis* (1), *P. pamiricus* (2), *P. badkhyzicus* (3) and *P. karakumensis* (4); (92) *P. allegrii* (1) and *P. nigrocostatus* (2). One dot may represent more than one close locality.

River Valley, summer 1980, S.Z.; One female (ISE), Bishkek env., 4.vii.1980, S.Z.; One female (ZMMU), foothills of Kirghizskiy Mt. Range, Tash-Moinok, 1200 m a.s.l., 23.iv.1983, S.O.; One male (ISE), ca. 20 km S of Bishkek, Malinovoye Canyon, 28.vii.1984, S.O.; One male (ZISP), Sary-Bulak, 17.v.1980, S.Z. **Kazakhstan:** Four females (ISE), Semipalatinsk Area, Kokpekty, 7.viii.1988, A.Z. **Uzbekistan:** One male (ZISP), Tashkent Area, Kainar-sai Stand, 10.v.1981, A.N.

*Pellenes (Pelmultus) amazonka* sp. nov.

(Figures 93–97, 159)

Female HOLOTYPE (ISE) from Turkmenistan: 10–18 km N of Guzhgy [= Kushka], ca. 9 km N of Chemen-Ibit, 18.iv.1993, D.L.

*Etymology*

The specific epithet is derived from the Russian word 'Amazonka', which means 'Amazon'; the mythical tribe consisted of females only, indicating that only females of the new species have so far been collected.

*Diagnosis*

Epigyne of the new species differs from all the Central Asian *Pellenes* species in having a rather narrow and wide central blind-ending pocket (figures 93, 95).

*Distribution*

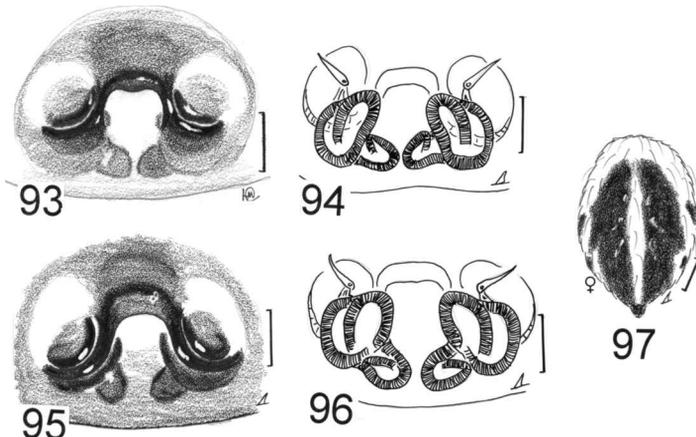
S. Kazakhstan, Turkmenistan and Tajikistan (figure 159).

*Habitat*

In Turkmenistan (near Chemen-Ibit), this species was collected in sandy desert.

*Description*

*Female.* PARATYPE from Zhambyl Area, Akkol'-Ulanbel' highway. Measurements. Carapace 1.85 long, 1.50 wide, 0.75 high at PLE. Ocular area 1.00 long, 1.15 wide anteriorly and 1.25 wide posteriorly. Diameter of AME 0.35. Abdomen 2.50 long, 2.00 wide. Cheliceral length 0.70. Length of leg segments: leg I:  $0.88+0.50+0.63+0.50+0.50$ ; leg II:  $0.75+0.50+0.50+0.43+0.43$ ; leg III:  $1.25+0.74+0.78+0.50+0.50$ ; leg IV:  $1.00+0.63+0.75+0.63+0.63$ . Leg spination. Leg I: Fm d. 0-0-2; Tb v. 1-2-1ap.; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Pt pr. 0-1-0; Tb v. 1-1; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-2; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb pr.



FIGS 93–97. Female genitalia and abdomen coloration of *Pellenes amazonka* sp. nov.: (93), (95) Epigyne, ventral view; (94), (96) Spermathecae, dorsal view; (97) Abdomen, dorsal view. Specimens: (93), (94), (97) Kazakhstan, Zhambyl Area; (95), (96) Tajikistan. Scale bars: genitalia 0.1 mm; abdomen 0.5 mm.

0-1, rt. 1-1, v. 1-2ap.; Mt d. 1-1-2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace brown, with two yellowish patches behind PLEs. Carapace sparsely covered with white hairs forming a pair of pale white stripes along ALE-PLE line. Black around eyes. Sternum, labium and maxillae yellow-brown. Chelicerae brown. Clypeus yellow-brown, densely covered with white hairs. Abdomen grey-yellow, dorsum as in figure 97. Book-lung covers yellow, tinged brownish. Spinnerets brown. Leg I brown, but yellow tarsi and dorsal surface of patella (the latter is also covered with white hairs). Other legs yellow-brown. Palps yellow, but coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 93-96.

#### Material examined

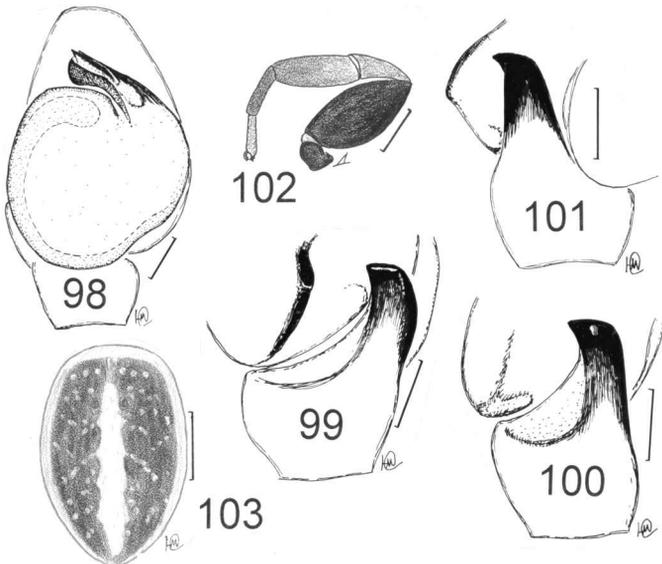
PARATYPES: **Kazakhstan:** One female (ZMMU), Zhambyl Area, Talasski Distr., 21st km of the highway Akkol'-Ulanbel', 15.v.1991, S. I. Ibraev and A.Z.; Two females (ISE), Moiyunkumy Distr., ca. 21 km S of Furmanovka, Moiyunkum Desert, 15-16.v.1992, A.F. and A.Z. **Tajikistan:** Two females (ZMMU), Kurgan-Tyube Area, Gandzhina, 21.04.1966, E.A.

#### *Pellenes (Pelmultus) badkhyzicus* sp. nov. (Figures 91, 98-103)

Male HOLOTYPE (ISE, one palpless) from Turkmenistan: Badkhyz, Kepelya Stand, 15.iv.1977, V. Y. Fet.

#### Etymology

The specific epithet is derived from the type locality, Badkhyz Reservation, Turkmenistan.



FIGS 98-103. Male genitalia and somatic characters of *Pellenes badkhyzicus* sp. nov. (holotype from Turkmenistan, Badkhyz): (98) Palp, ventral view; (99), (100) Tibial apophysis, dorsal view; (101) Tibial apophysis, retrolateral view; (103) Abdomen, dorsal view. Scale bars: (98)-(101) 0.1 mm; (102), (103) 0.5 mm.

*Diagnosis*

This species shows a distinct shape to the CTA, which is heavily sclerotized and rounded at the top, the tegulum being almost round (cf. figures 98 and 71, 74, 77, 80). *P. badkhyzicus* is also separated from other members of the subgenus by the short and thick tibial apophysis (figures 99–101 vs 72, 75, 78, 81, etc.).

*Distribution*

The type locality only (figure 91).

*Habitat*

The species was collected in the pistache-woodlands with *Pistacea vera*.

*Description*

*Male.* Measurements. Carapace 1.85 long, 1.35 wide, 0.75 high at PLE. Ocular area 0.80 long, 1.00 wide anteriorly and 1.00 wide posteriorly. Diameter of AME 0.35. Abdomen 1.90 long, 1.20 wide. Cheliceral length 0.70. Length of leg segments: leg I: 1.00+0.63+0.88+0.50+0.50; leg II: 0.75+0.38+0.50+0.58+0.38; leg III: 1.25+0.75+0.68+0.50+0.50; leg IV: 0.88+0.43+0.50+0.63+0.50. Leg spination. Leg I: Fm d. 0-1-1-2; Tb pr. 0-1, v. 1-2-2; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-3; Pt pr. 0-1-0; Tb v. 1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 2ap.; Mt d. 1-2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown, sparsely covered with white scales. Eye field dark brown, with two yellowish patches behind PLEs. Clypeus brown, with a thin transverse white line of scales. Sternum light brown. Labium and maxillae brown. Chelicerae dark brown, each anteriorly with three vertical white lines of scales. Dorsum grey-brown, with a median yellow strip (figure 103). Venter grey, with three longitudinal yellow stripes forming a yellow patch before spinnerets. Book-lung covers greyish yellow. Spinnerets brown. All legs yellow-brown, but femora brown (femora I even dark brown, figure 102). Palpal structure as in figures 98–101.

***Pellenes (Pelmultus) borisi* sp. nov.**

(Figures 24, 104–106)

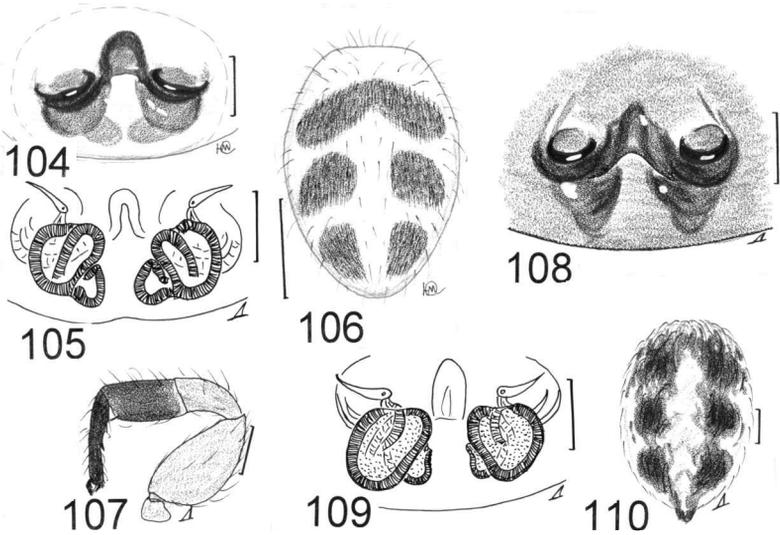
Female HOLOTYPE (ISE) from Kazakhstan, S-Kazakhstan Area, Arys' env., 7.ix.1987, D.L.

*Etymology*

The species is named after Mr Boris G. Desyatov, who helped one of us (DVL) during a stay in Arys' (S. Kazakhstan) and in collecting spiders.

*Diagnosis*

The new species is most closely related to *Pellenes canosus* from France, but both epigynal and spermathecal structure are diagnostic (cf. figures 104, 105 and 108, 109). Additionally, *P. canosus* has very peculiar coloration of the first leg (figure 107) never observed in either *P. borisi* or in other Central Asian *Pellenes* species. Dorsal colour markings of both species are also clearly distinct (figures 106 vs 110).



FIGS 104–110. Female of *Pellenes borisi* sp. nov. (holotype from Kazakhstan, Arys) (104)–(106) and *P. canosus* Simon, 1937 (holotype from France) (107)–(110): (104), (108) Epigyne; (105), (109) Spermathecae; (106), (110) Abdomen, dorsal view; (107) Right first leg, median view. Scale bars: (104), (105), (108), (109) 0.1 mm; (107), (110) 0.5 mm; (106) 1 mm.

*Distribution*

The type locality only (figure 24).

*Habitat*

The holotype was collected in semidesert *Artemisia-Allhagi* steppe.

*Description*

*Female* (HOLOTYPE). Measurements. Carapace 2.00 long, 1.50 wide, 0.85 high at PLE. Ocular area 0.90 long, 1.20 wide anteriorly and 1.25 wide posteriorly. Diameter of AME 0.40. Abdomen 2.75 long, 1.75 wide. Cheliceral length 0.60. Length of leg segments: leg I: 1.00+0.63+0.75+0.38+0.38; leg II: 0.75+0.50+0.63+0.31+0.32; leg III: 1.25+0.63+0.75+0.50+0.50; leg IV: 1.05+0.45+0.50+0.43+0.43. Leg spination. Leg I: Fm d. 0-0-3; Tb v. 2-2-1ap.; Mt v. 2-2ap. Leg II: Fm d. 0-0-4; Pt rt. 0-1-0; Tb pr. 0-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 0-2-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap. v. 2-2ap. Leg IV: Tb rt. 1-1, v. 1-2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Coloration. Carapace light brown, with black around eyes. Eye field anteriorly with a wide transverse white band of scales. There is a wide yellowish transverse band behind PLEs which is sparsely covered with white scales. Clypeus yellow, densely covered with white scales. Sternum yellow. Maxillae and labium brownish yellow. Chelicerae brown. Abdomen yellow, with dorsum as in figure 106. Book-lung covers yellow. Spinnerets yellow-brown. Legs yellow, but apical parts of femora, patellae and tibiae of leg I brown. Epigyne and spermathecae as in figures 104, 105.

***Pellenes (Pelmultus) denisi*** Schenkel, 1963 comb. nov.

*Pellenes denisi* Schenkel, 1963: 440, figure 252.

*P. denisi*: Wesołowska, 1981: 151, figures 68, 69.

*P. albomaculatus* Peng and Xie, 1993: 80, 81, 83, figures 1–4 (female holotype, not examined).  
New Synonymy.

*Diagnosis and (re)description*

See Wesołowska (1981) and Peng and Xie (1993: sub. *P. albomaculatus*).

*Distribution*

All records of *Pellenes denisi* in Central Asia (Nenilin, 1984a, 1985; Mikhailov, 1997) are based on Andreeva's misidentification of the females from Tajikistan (Andreeva, 1975; 1976). Reasoning from Andreeva's figures (Andreeva, 1976: figures 101–102), we have concluded she dealt with a species related to *P. ostrinus* Simon, 1868 and having nothing in common with true *P. denisi* (cf. Wesołowska, 1981: figures 68, 69).

Both the description and figures of *P. albomaculatus* recently described from Xinjiang (China) (Peng and Xie, 1993: figures 1–4), leave no doubt that this species is to be considered a junior synonym of *P. denisi* redescribed by Wesołowska (1981).

Therefore, *P. denisi* has actually been recorded from NW China (Inner Mongolia and Xinjiang) only (Schenkel, 1963; Wesołowska, 1981; Peng and Xie, 1993: sub. *P. albomaculatus*) and has not yet been found elsewhere.

***Pellenes (Pelmultus) epularis*** (O. P.-Cambridge, 1872) comb. nov.

(Figures 91, 111–130)

*P. epularis*: Mikhailov and Fet, 1994: 517.

*P. calvus*: Nenilin, 1984b: 134 (*pro parte*); 1985: 130 (*pro parte*).

*P. sp.-2*: Prószyński, 1979: 315.

*P. maderianus* Kulczyński, 1905: 457 (male holotype from the IZW, examined, figures 121–123). New Synonymy.

*P. maderianus*: Prószyński, 1976: 52, figure 273, m. 139.

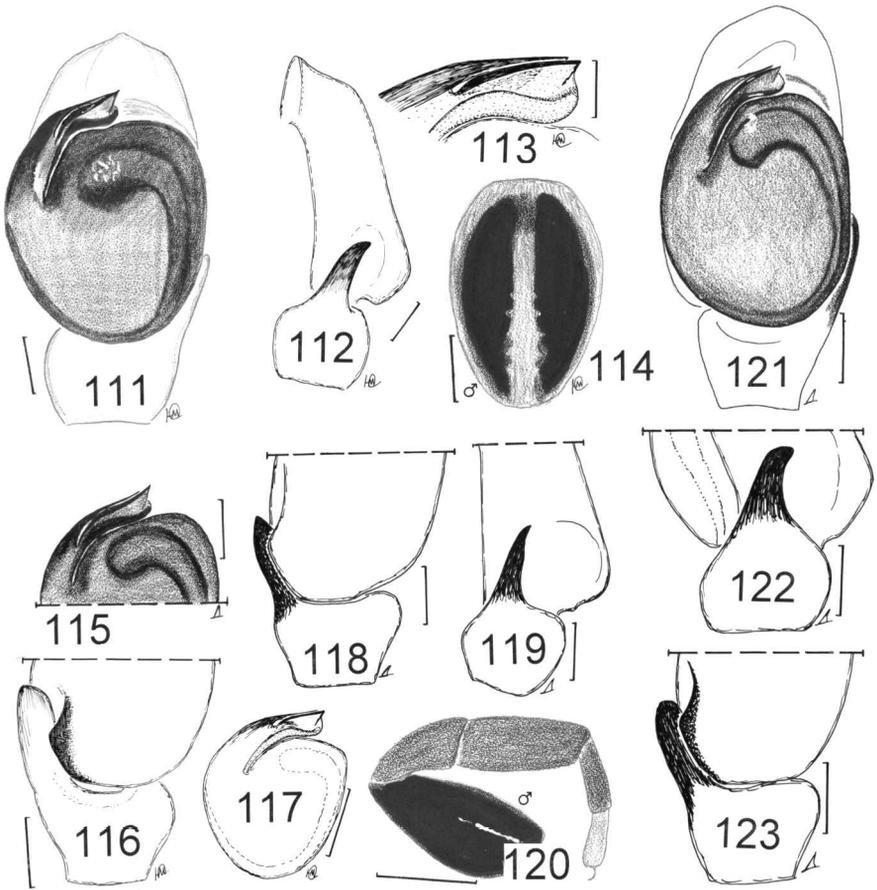
*P. nigrociliatus*: Dunin and Mamedov, 1992: 57 (misidentification).

*Diagnosis*

*Pellenes epularis* may be confused with *P. geniculatus* and *P. tocharistanus*. Main diagnostic characters distinguishing it from the former species are: the shorter tibial apophysis (figures 119, 122, 142), the cut tip of the CTA (cf. 115 and 136), dorsal colour-markings (figures 114, 134, 140) and the female genitalia, i.e. shape of the CBP and epigynal flaps (cf. figures 125–130 and 144–148). From *P. tocharistanus* it can be separated by the coloration of the male first leg (figures 83, 120) and abdomen (cf. figures 84, 114), shape of the CTA (figures 71, 115) and the tibial apophysis (cf. figures 73 and 116, 123) and the female genitalia, primarily by shape of the CBP (figures 125–130 vs 167–170).

*Distribution*

Until now, the species has been known from males collected from the Levant and Madeira only (Prószyński, 1990: sub. *P. epularis* and *P. maderianus*). In Central Asia (figure 91) and the Caucasus, *P. epularis* has so far been recorded under different names from Turkmenistan: Murghab (Prószyński, 1979: sub. *Pellenes sp.-2*; Nenilin, 1985: sub. *P. calvus*; Mikhailov and Fet, 1994), Kyrgyzstan: Issyk-Kul'



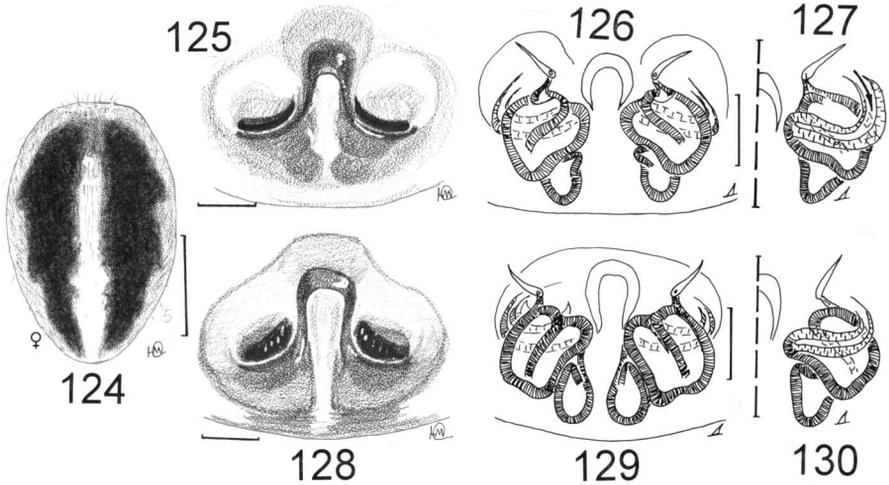
FIGS 111–123. Male genitalia and somatic characters of *Pellenes epularis* (O. P.-Cambridge, 1872): (111), (121) Male palp, ventral view; (112), (119), (122) Tibial apophysis and cymbium (part), retrolateral view; (116), (118), (123) Tibial apophysis and cymbium (part), dorsal view; (113), (115) Embolic division, ventral view; (117) Bulbus, ventral view; (114) Abdomen, dorsal view; (120) First right leg, lateral view. Specimens: (111), (112), (114), Kazakhstan, Kapchagai; (113), (116), (117), (120) Kyrghyzstan, Chu Valley; (115), (118), (119) Uzbekistan, Ak-Mechet'; (121)–(123) Madeira (holotype of *P. maderianus*). Scale bars: palps 0.1 mm; abdomen and leg 0.5 mm.

Lake (Nenilin, 1984b: sub. *P. calvus*) and SE Azerbaijan (Dunin and Mamedov, 1992: sub. *P. nigrociliatus*) (specimens of authors cited above re-examined).

Prószyński (1992) recorded *P. maderianus* (a junior synonym of *P. epularis*) from India from a single female, but as it is evident from Prószyński's figures (figures 129–131) the Indian specimen belongs to another species.

#### *Habitat*

The species has been collected in juniper stands at the belt of mountain xerophytes (C. Kopetdagh) and sandy desert (barchan sands near Chemen-Ibit and Kapchagai); in SE Azerbaijan, *P. epularis* was recorded in cotton fields (Dunin and Mamedov, 1992: sub. *P. nigrociliatus*).



FIGS 124–130. Female genitalia and somatic characters of *Pellenes epularis* (O. P.-Cambridge, 1872): (124) Abdomen, dorsal view; (126), (128) Epigyne; (126), (129) Spermathecae, dorsal view; (127), (130) Spermathecae, ventral view. Specimens: (124) Turkmenistan, W. Kughitang; (125), (128) Kyrgyzstan (Chon-Uryukty and Osh respectively); (126), (127) Uzbekistan, Ak-Mechet'; (129), (130) Kazakhstan, Pavlodar. Scale bars: genitalia 0.1 mm; abdomen 1 mm.

### Description

Specimens from Almaty Area, 153rd km of highway Almaty-Karaganda.

**Male.** Measurements. Carapace 1.75 long, 1.30 wide, 0.85 high at PLE. Ocular area 0.75 long, 1.10 wide anteriorly and 1.20 wide posteriorly. Diameter of AME 0.40. Abdomen 1.75 long, 1.25 wide. Cheliceral length 0.75. Length of leg segments: leg I:  $1.13+0.65+0.73+0.50+0.50$ ; leg II:  $0.75+0.63+0.63+0.30+0.30$ ; leg III:  $1.25+0.63+0.70+0.50+0.50$ ; leg IV:  $1.00+0.50+0.55+0.50+0.50$ . Leg spination. Leg I: Fm d. 0-1-1-2; Tb v. 1-2; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-2; Tb pr. 0-1, v. 1-1; Mt v. 2-2ap. Leg III: Fm d. 0-0-0-3ap.; Pt rt. 0-1-0; Tb pr. 1-1, rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt rt. 0-1-0; Tb rt. 1-1, v. 2ap.; Mt d. 1-2ap., pr. and rt. 1ap., v. 2-2ap. Coloration. Carapace dark brown, sparsely covered with white scales forming also a pair of pale triangular spots behind PLE. Clypeus brown, its lower margin with a thin row of white short hairs. Sternum, maxillae, labium and chelicerae brown to dark brown. Abdomen: dorsum grey, with a median stripe as shown in figure 114; sides and venter grey. Book-lung covers and spinnerets yellow brownish. Leg I: femora dark brown; remaining segments red/orange (figure 120). Other legs: femora brown to dark brown; remaining segments grey-yellow to orange. Palpal structure as in figures 111–113, 115–119, 121–123.

**Female.** Measurements. Carapace 2.00 long, 1.60 wide, 0.95 high at PLE. Ocular area 0.85 long, 1.20 wide anteriorly and 1.35 wide posteriorly. Diameter of AME 0.40. Abdomen 3.00 long, 2.00 wide. Cheliceral length 0.65. Length of leg segments: leg I:  $1.00+0.63+0.75+0.43+0.43$ ; leg II:  $0.88+0.38+0.43+0.38+0.38$ ; leg III:  $1.50+0.63+0.63+0.50+0.43$ ; leg IV:  $1.20+0.50+0.75+0.43+0.43$ . Leg spination. Leg I: Fm d. 0-0-1; Tb v. 2-1; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Tb pr. 0-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1 v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 1-2ap. Leg IV: Pt rt. 0-1-0; Tb pr. 0-1, rt.

1-1, v. 1-2ap.; Mt d. 2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown, sparsely covered with white scales (scales form a pair of triangular pale white spots behind PLE). Clypeus brown, with area below AMEs covered with white hairs. Sternum yellow-brown. Maxillae, labium and chelicerae brown to dark brown. Dorsum grey, with a longitudinal white stripe (figure 124). Leg I: femur, tibia and metatarsus brown, patella and tarsus yellow to yellow brownish. Other legs yellow brownish, but femora usually darker (brown to dark brown). Book-lung covers and spinnerets yellow-brown. Palps yellow, but coxae and proximal parts of femora brown. Epigyne and spermathecae as in figures 125–130.

#### *Material examined*

**Iran:** One male (SMF), Elburs-Gebirge N. Tehran, Shemshak, 2650–2900 m a.s.l., 17–25.vi.1978, Martens and Pieper. **Azerbaijan:** One male, one female (ISE), Saatly Distr., Dzhafarkhan, 20.vii.1982, P.D.; One male (ISE, det. hitherto by P.D. as *P. nigrociliatus*), Ismailly, Kyurdmasi env., 12.v.1986, P.D.; One male (ISE), Lerik Distr., Gosmalian, 14.v.1985, P.D. **Russia:** One male (ZMMU), Kabardino-Balkariya, El'brus Mt., 2300–2700 m a.s.l., 27.vi–25.vii.1989, A. L. Saravaiski. **Georgia:** One female (ISE), Adigeni, 30.vi.1985, A. V. Abramov. **Kazakhstan:** One female (ZMMU), Uralsk Area, Dzhanybek, 7.vii.1974, coll.?; One female (ISE), Almaty Area, Dzhambul Distr., 80–95 km NW of Uzunagach, Taukum Sands, 13.v.1992, A.F. and A.Z.; Two females (ISE), same area, Kapchagai env., 26.v.1990, A.F. and A.Z.; One male (ISE), same locality, 15.v.1986, A.Z.; One female (ISE), same locality, 15.iv.1989, A.Z.; One male (ISE), same area, 153rd km of highway Almaty-Karaganda, 5.v.1988, M. V. Zarko; Two males (ZMTU), Zhambyl Area, Chu Distr., Aspara, 43°23'N73°37'E, 22–28.v.1997, A. V. Gromov and S. Y. Rakov; One female (ISE), Pavlodar env., 30.v.1989, O.L.; One female (ISE), Shimkent Area, Suzak Distr., 25 km W of Chulak-Kurgan, Karatau Mt. Range, 25.vi.1989, A.Z. **Kyrgyzstan:** One female (ZISP), Issyk-Kul' Area, Kungei-Ala-Tau Mt. Range, Chon-Uryukty stand, 2000–2500 m a.s.l., 22.vi.1983, S.O.; Three females (ISE), Osh Area, Ak-Buurinskoye Canyon, 1500 m a.s.l., 26.vi.1985, A.Z.; Two males, two females (ISE), Chu River Valley, summer 1980, S.Z.; One male (ISE), same locality, summer 1980, S.Z.; One male, one female (SVO), same locality, Kok-Dzhar, 28.v.1985, S.O.; One female (ISE), Dzhahalabad Area, Sary-Chelek Reservation, 2 km S of Arkit, 17–20.vi.1992, A.F. and A.Z.; 1 male (ISE), Dzhahalabad env., 3.iv.1988, S.O.; One male (ISE), same area, Charyn River Canyon, Sartogai, 12.vi.1993, S.O.; Two females (ISE), Kugart Riverside, 31.v.1980, S.Z.; One male (ISE), Osh Area, Batken Distr., Sakhskoye Canyon, 1800 m a.s.l., 4.v.1986, A.Z. **Uzbekistan:** One female (ZMMU), ca. 40 km SW of Tashkent, Gul'bakhor, 5.v.1986, Kurbatov; Two females (ISE), ca. 20 km SE of Kagan, 18–19.v.1994, A. V. Gromov; Three males, four females (ISE), Surkhandaria Area, Babatagh Mt. Range, Ak-Mechet', 27.iv.1994, S.O.; One male, one female (ZMMU), same area, ca. 47 km SW of Denau, Babatagh Mt. Range, 13.v.1994, A.Z.; One male (ZMMU), ca. 7 km N of Kitab, Zeravshanskiy Mt. Range, 800 m a.s.l., 26.iv.1993, D.L. and A.Z. **Tajikistan:** Four females (ISE), Kurgan-Tyube Area, Iliychevskiy Distr., Aktau Mt. Range, Gandzhina, 800 m a.s.l., 21–23.iv.1986, A.Z. and S.Z.; One female (ISE), same locality, 7.vi.1974, A.K.; One male (ZMMU), Shugnanski Mt. Range, Shardara Canyon, Ridzhest Kishlak, 20.v.1970, E.A.; Two males (ISE), One male (ZISP), Yavan env., 25.vi–5.viii.1970, A.K. and M. Umarov; One female (ZMMU), Khozratisho Mt. Range, Muminobad env., 15.vi.1966, E.A.; One female (ISE),

Pyandzh River valley, v–vi.1970, E.A.; One male (ISE), Peter I Mt. Range, Chil'dara River Canyon, 27.vii.1988, S.O.; One female (ISE), Pamir, Durun-Dara, 2500–3000 m a.s.l., 10.viii.1970, E. Blagoveshenskaya. **Turkmenistan:** One male, one female (ISE), 10–18 km N of Guzhgy [= Kushka], ca. 9 km N of Chemen-Ibit, 18.iv.1993, D.L.; One female (ISE), C-Kopetdagh, Dushak Mt., 18.vii.1979, V. Belov; One female (ZMMU), Ashghabad env., Germab, 18.vii.1990, A. N. Galkin; One male (ISE), Sapytkachi, 8.iv.1993, A.Z.; Two males (ZMMU), SW-Kopetdagh, Garry-Gala [= Kara-Kala] env., 300 m a.s.l., 15–21.vi.1985, T. Lukarevskaya. **Uncertain localities:** One female (ZMMU), Farish Distr., Kyzyl-Kum Kolkhoz, iv.1982, coll.?; Two females (ZMMU), Dusti (?), 28.iv.1991, S.O.; One female (ISE), MK 6/6 1994, O.L.; One male, one female (ISE), Syr-Dariya River, summer 1933, M. I. Danilova.

### Comparative material

Male HOLOTYPE of *Pellenes maderianus* (for its genitalia see figures 121–123) (IZW, 46/51u), 'Madeira'.

### *Pellenes (Pelmultus) geniculatus* (Simon, 1868) comb. nov.

(Figures 5, 24, 131–153)

*Attus geniculatus* Simon, 1868: 49 (syntypes from the MNHN, examined).

*P. (?) geniculatus*: Pavlenko, 1985: 150; Zyuzin *et al.*, 1994: 7.

*P. geniculatus*: Dunin, 1984: 52, 58, figure 14; Dunin and Mamedov, 1992: 57.

*Attus simoni*: O. P.-Cambridge, 1872: 239 (male holotype from the Oxford Hope Collection, not examined). For its genitalia see Prószyński, 1984a: 100. New Synonymy.

*P. simoni* Mikhailov and Fet, 1994: 518; Nenilin, 1984b: 134; 1985: 130 (*pro parte*).

*P. kulabicus* Andreeva, 1976: 84, figures 99–100 (female holotype from the ZMMU, examined, figures 144–146). New Synonymy.

*P. kulabicus*: Nenilin, 1984a: 23; 1985: 130; Mikhailov and Fet, 1994: 517.

*P. tauricus*: Nenilin, 1985: 130 (*pro parte*).

### Diagnosis

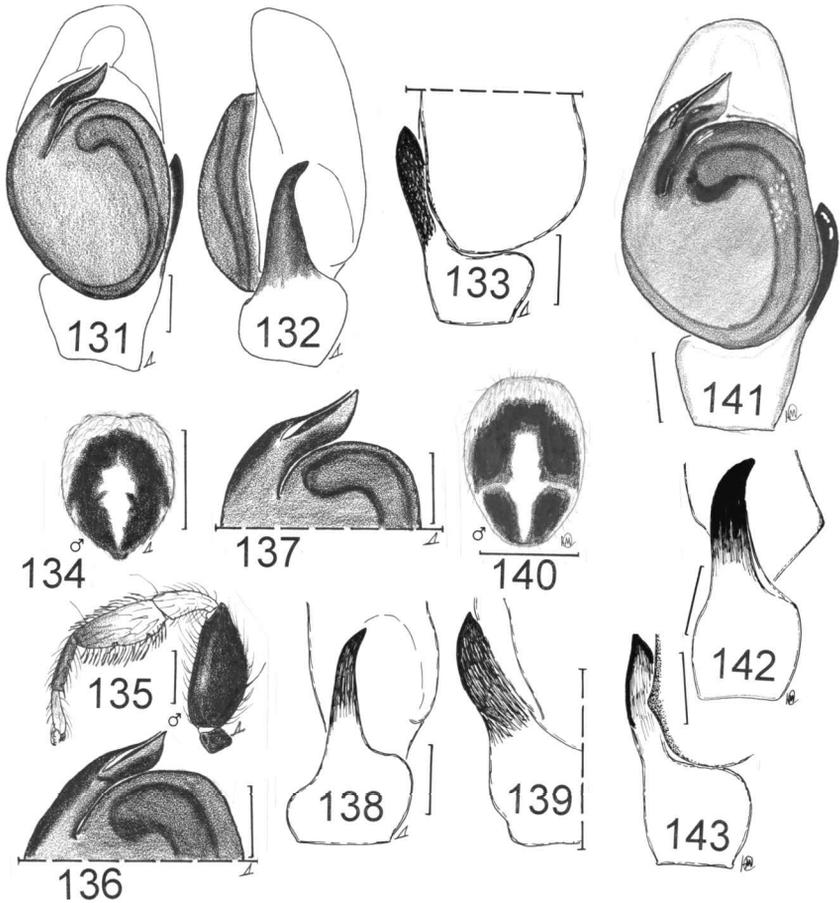
The species shows a very characteristic structure of the tibial apophysis, which is quite wide and bent at the top (figures 138, 139, 142), and the epigyne has a rather wide but short CBP (figures 144, 152, 153), as well as a peculiar abdominal (cross shaped) coloration (figures 140, 149–151). See also comments under 'Diagnosis' of *Pellenes epularis*.

Based on Prószyński's figures of the holotype of *Attus simoni*, i.e. the male palpus in four positions and the dorsal colour markings (see Prószyński, 1984a: 100 and cf. figures 131–143), it is safe to synonymize this species with *Pellenes geniculatus*.

### Distribution

From France in the west to Central Asia in the east, where *Pellenes geniculatus* has so far been recorded from Azerbaijan: Apsheron Peninsula (Dunin, 1984; Dunin and Mamedov, 1992); Kyrgyzstan: Sary-Chelek (Nenilin, 1984b: sub. *P. simoni*); Turkmenistan: Ashghabad, Badkhyz (Nenilin, 1984a: sub. *P. kulabicus*; Mikhailov and Fet, 1994: sub. *P. simoni*); Tajikistan: Elibuz (Andreeva, 1976: sub. *P. kulabicus*); and Uzbekistan: Sairob (Andreeva, 1976; Nenilin, 1984a; both sub. *P. kulabicus*). All the Central Asian localities are shown in figure 24.

This species has also been reported from Kazakhstan: the Barsakel'mes Island

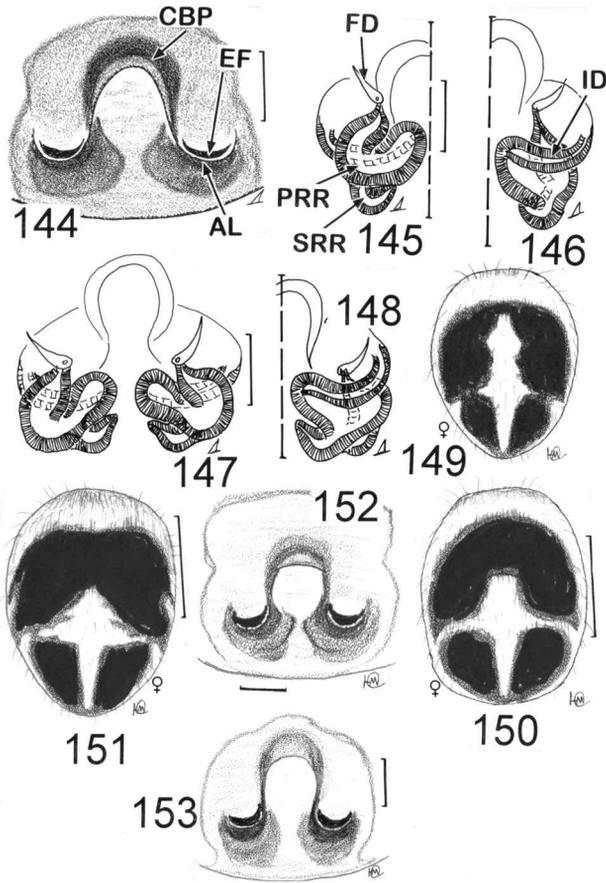


FIGS 131–143. Male genitalia and somatic characters of *Pellenes geniculatus* (Simon, 1868): (131), (141) Palp, ventral view; (132) Palp, retrolateral view; (133), (139), (143) Tibial apophysis and cymbium (part), dorsal view; (138), (143) Tibial apophysis and cymbium (part), retrolateral view; (134), (140) Abdomen, dorsal view; (135) First right leg, median view; (136), (137) Embolic division, ventral view. Specimens: (131)–(133), (135), (136) Turkmenistan, Gezgyadyk Mt. Range; (134) Kyrgyzstan, Sary-Chelek; (137)–(139) Tajikistan, Gandzhyna; (140), Kyrgyzstan, near Bishkek; (141)–(143) Turkmenistan, Firyuza. Scale bars: genitalia 0.1 mm; leg 0.5 mm; abdomen 1 mm.

in the Aral Sea (Pavlenko, 1985; Zyuzin *et al.*, 1994). One of us (DVL) re-examined Pavlenko's specimen (1 female) and found it to belong to *Yllenus* sp.

*Habitat*

In Turkmenistan, the species was collected in juniper stands at the belt of mountain xerophytes and almond-tree stands (C. Kopetdagh), pistache-woodlands (Badkhyz) and wormwood-ephemeroid associations (SW Kopetdagh); in Kyrgyzstan, it was reported (Nenilin, 1984b: sub. *P. simoni*) to occur in shrubby and stony steppes of the W. Tian-Shan Mts; and in Azerbaijan (Apsheron Peninsula), *P. geniculatus* was recorded in fixed sands, ephemeral herb-grass (*Poa bulbosa*, *Zerna rubens*, *Eremopyrum orientale*, etc.) and wormwood-saltwort (*Salsola nobulosa*,



Figs 144–153. Female genitalia and somatic characters of *Pellenes geniculatus* (Simon, 1868): (144), (152), (153) Epigyne; (145)–(148) Spermathecae in dorsal (145, 147) and ventral (146, 148) views; (149)–(151) Abdomen, dorsal view. Specimens: (144)–(146) Tajikistan, Muminobad (holotype of *P. kulabicus*); (147), (148) Turkmenistan, Gezgyadyk Mt. Range; (149)–(153) Kazakhstan, Kapchagai. Scale bars: genitalia 0.1 mm; abdomen 1 mm.

*S. dendroides*, *Artemisia fragrans*, etc.) associations (Dunin, 1984); and in cotton fields (Dunin and Mamedov, 1992).

#### Description

*Male* (from C. Kopetdagh, Firyuza). Measurements. Carapace 1.75 long, 1.25 wide, 0.85 high at PLE. Ocular area 0.70 long, 1.05 wide anteriorly and 1.10 wide posteriorly. Diameter of AME 0.38. Abdomen 1.75 long, 1.25 wide. Cheliceral length 0.63. Length of leg segments: leg I: 1.00+0.63+0.75+0.43+0.43; leg II: 0.75+0.58+0.43+0.38+0.38; leg III: 1.13+0.63+0.63+0.50+0.50; leg IV: 0.88+0.63+0.75+0.40+0.43. Leg spination. Leg I: Fm d. 0-1-1-3; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2-2-ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-4; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v.2-2ap. Leg III: Fm d. 0-1-1-4; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Leg IV: Tb pr. 1-1, rt. 0-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown,

with a pair of yellow spots and a wide transverse band of white scales behind PLE. Clypeus brown, its anterior margin with a thin row of white and short overhanging hairs. AME surrounded by bright orange scales. Chelicerae, maxillae and labium dark brown. Sternum brownish to dark brown. Abdomen: dorsum brown, with either cross-link colour markings (figure 140), or a longitudinal white stripe (figure 134). Book-lung covers yellowish. Spinnerets brownish. Leg I: coxa, trochanter and femur dark brown; patella and tarsus yellow; tibia yellow, but distally tinged with brown (figure 135). Remaining legs: femora brown to dark brown; coxae and trochanters yellow; other segments yellow-brown. Palps brown, but patellae and apical parts of cymbium yellow. Patellae additionally densely covered with white scales. Palpal structure as in figures 131–133, 136–140, 141–143.

*Female* (HOLOTYPE of *P. kulabicus*). Measurements. Carapace 1.75 long, 1.35 wide, 0.75 high at PLE. Ocular area 0.75 long, 1.10 wide anteriorly and 1.20 wide posteriorly. Diameter of AME 0.40. Abdomen 2.50 long, 1.90 wide. Cheliceral length 0.75. Length of leg segments: leg I: 0.95+0.56+0.63+0.43+0.48; leg II: 0.75+0.50+0.50+0.31+0.38; leg III: 1.25+0.63+0.75+0.50+0.50; leg IV: 1.00+0.50+0.54+0.50+0.51. Leg spination. Leg I: Fm d. 0-0-2; Tb v. 1-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-0-2; Tb v. 1-2; Mt v. 2-2ap. Leg III: Fm d. 0-0-3; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Leg IV: Tb rt. 0-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Coloration. Carapace brown, with black around eyes and a wide transverse band of white scales behind PLE. Eye field covered with white scales. Clypeus yellowish, densely covered with white hairs. Sternum and labium light brown. Maxillae and chelicerae brown. Abdomen as shown in figures 149–151; sides and venter brownish-yellow. Book-lung covers brownish-yellow. Spinnerets brown. Legs I brown, but patellae and tarsi yellow. Other legs: coxae and trochanters yellow; remaining segments brownish yellow; femora usually darker (brown to dark brown). Epigyne and spermathecae as in figures 144–148, 152, 153.

#### *Material examined*

**Azerbaijan:** One male (ZMMU), Baky env., 29.v.1977, P.D.; One female (ISE), same locality, 14.v.1981, P.D.; One male (ZMMU), same locality, 18.iv.1983, P.D.; Two females (ISE), same locality, 20.iv.1988, P.D.; One female (ISE), Apsheron Peninsula, Zykha, 14.v.1977, P.D.; One female (ISE), Musaly Distr., Kazakh, 29.v.1981, A.Z. **Kazakhstan:** Five females (ISE), Almaty Area, Kapchagai env., 15.v.1986, A.Z.; One male (ZMMU), same locality, 10.06.1992, O.L.; One male (ISE), same locality, 15.iv.1989, C. K. Tarabayev; Three males (ISE), same area, Mts north to Otar, 11.v.1988, C. K. Tarabayev; One male (ISE), Chilikskiy Distr., Charyn River Canyon, 29.v.1991, A.Z.; One female (ZMMU), same area, 153rd km of highway Almaty-Karaganda, 5.v.1988, M. V. Zarko; Two males (ISE), same area, Dzhambul Distr., 80–95 km NW of Uzunagach, Aitau Ms., 12.v.1992, A.F. and A.Z.; One male, one female (SVO), Zhambyl Area, Talass Distr., 21st–70th km of highway Akkol'-Ulanbel', 15.v.1991, S.I. and A.Z.; One male (ZMMU), same area, ca. 20 km N of Zhambyl, Karatau Mt. Range, 16.v.1991, S.O.; One female (ISE), same area, Moiynkum Distr., 124th km of highway Akkol'-Ulanbel', 17.v.1991, S.I. and A.Z.; One male, two females (ISE), same area and distr., ca. 6 km NE of Khantau foothills, 23.v.1993, S.I. and A.Z.; One male (ISE), same area, Georgievka, 24.iv.1984, S.O.; One male (ISE), same area, Sarysu Distr., ca. 79 km NE of Ulanbel', 18–19.v.1991, S.I. and A.Z.; One male (ISE), ca. 47 km N

of Turkestan, Karatau Mt. Range, 650 m a.s.l., 43°43'N 68°12'E, 8–10.v.1994, D. A. Milko; One female (ISE), S-Kazakhstan [= Shymkent] Area, Lenger Distr., ca. 5 km SE of Kaskasu, 20.vi.1993, A. V. Gromov; One male (ISE), Taldy-Kurgan Area, Gvardeiskiy Distr., Bakchit, 9.v.1992, A.F. and A.Z.; One female (ZMMU), same area, Krasnogorsk Distr., ca. 16 km NW of Kenen, Chu-Ili Mts., 14.vi.1990, A.F. and A.Z.; One female (ISE), Ustyurt Plateau, near Novyi Uzen', 12.v.1989, A.Z.; One female (ISE), ca. 40 km S of Aktau [= Shevchenko], 7.v.1991, E. E. Koptykbayev. **Kyrgyzstan:** One male, two females (ISE), Dzhahalabad Area, Tash-Kumyr, 14–15.vi.1992, A.F. and A.Z.; One female (ISE), same area, ca. 13 km N of Tash-Kumyr, Kara-Tyt, 41°28'N 72°14'E, 18–23.v.1994, S.O.; One male (ZISP), same area, Sary-Chelek Reservation, Arkit, 2–5.v.1983, S.Z.; Two females (ISE), Talass Area, Toktogul Distr., ca. 25 km NE of Kara-Kul', Kyek-Bel' Pass, 1500 m a.s.l., 27–28.vi.1992, A.F. and A.Z.; One female (ZMMU), same area, Karasu Distr., Papan, 22–23.vi.1985, A.Z.; Two females (ZISP), northern slope of Kirghizskiy Mt. Range, Chon-Aryk env., Bozbul'tas Mt., 1200 m a.s.l., 29.v.1983, S.O.; One female (ISE), same range, ca. 20 km S of Bishkek, Malinovoye Canyon, 1500 m a.s.l., 1.vii.1983, S.O.; One male, one female (ISE), same range, Ala-Archa stand, 1.vii.1991, S.O.; One male, one female (SVO), Alashtoo Mt. Range, Alash, 1750 m a.s.l., 26.v.1993, S.O.; One male, one female (ISE), Chu River Valley, Kok-Dzhar, 28.v.1985, S.O. **Tajikistan:** One female (ZMMU, holotype of *P. kulabicus*), Khozratisho Mt. Range, ca. 40 km from Muminobod, Elibuz, 17.vi.1966, E.A.; Two males (ISE), Kurgan-Tyube, Il'ichevskiy Distr., Gandzhina, 800 m a.s.l., 21.iv.1986, A.Z. and S.Z.; Two males (ISE), same locality, 19.iv.1991, S.O.; One male, one female (ISE), same locality, 10.iv.1988, S.Z. and A. S. Zor'kin; One female (ISE), same area, Dzhilikul'skiy Distr., Garavuti, 22.iv.1984, A.Z.; One female (ZMMU), W-Pamir, Viskharov Canyon, Yugan, 31.v.1970, E.A. **Uzbekistan:** One female (ZMMU, paratype of *P. kulabicus*), Sairob, Baisun, 7.v.1967, Lopatin and Chikatunov; One female (ISE), Kelif, 21.iv.1976, A.K.; Five males (ISE), ca. 7 km N of Kitab, Zeravshanskiy Mt. Range, 800 m a.s.l., 26.iv.1993, D.L. and A.Z.; Two males, two females (SVO), Surkhandaria Area, Babatagh Mt. Range, Ak-Mechet', 27.iv.1994, S.O.; One female (ISE), same area, ca. 47 km SE of Denau, Babatagh Mt. Range, 13.v.1994, A.Z.; One female (ISE), Navoi Area, ca. 6 km NE of Dzhangel'dy, 21.v.1994, A.Z. **Turkmenistan:** One male (ZISP), Ashghabad env., 23–29.iii.1975, N. Poplavko; One male (ISE), same locality, Pervomaiskoye, 19.iv.1991, S. V. Lukiyantsev; Two males (ISE), Five males (ISE), Two males (ISE), SW-Kopetdagh Mts., Garry-Gala [= Kara-Kala] env., 28–29.iv.1993, D.L.; One male (ZMMU), same locality, 25.iv–5.v.1987, A.Z. and T. Pavlenko; One male (ISE), same locality, Syunt Mt., 3.v.1982, V. Y. Fet; One female (ISE), same locality, Kalalegyoz stand, 400 m a.s.l., 19–26.v.1990, T. Lukarevskaya; One male (ZISP), same locality, Khodzhakala, 11.v.1984, V. Y. Fet; One female (ISE), C-Kopetdagh Mts., Kopetdagh Reservation, ca. 12 km SE of Annau, Kel'tytchinar River Valley, 18.v.1987, V.D.; Six males (ISE), ca. 5 km S of Firyuza, 4.iv–20.v.1987, V.D.; One male (ZISP), near Firyuza, 17–24.iii.1979, G. T. Kuznetsov; One male (ZISP), Badkhyz, Kyzyl-Dzhar stand, 12–22.iv.1978, V. Krivokhatski; Three males, one female (ISE), same locality, 10–12.iv.1993, D.L.; One female (ISE), Kughitangh, Dzhilylyau Plateau, Airi-Baba Mt., 2000–2300 m a.s.l., 14–17.vii.1991, V.D.; Three males, four females (ISE), 20–25 km SE of Pulikhatum, Gezgyadyk Mt. Range, 500 m a.s.l., 15–16.iv.1993, D.L.; One male (ISE), W-Kopetdagh Mts., Tersakan River, v.1993, S. Zabelin; Two males (ISE), ca. 10 km S of Bakharden, 3.iv.1993,

D.L.; One female (ISE), S-Ustyurt Plateau, Kaplankyrskiy Reservation, 7.v.1983, O. Soyunov; One male (ZMMU), same locality, 22.iv.1985, L. A. Mitroshina; One male (ZMMU), Sary-Kamysh Lake, 10.iv.1985, O. Soyunov.

#### *Comparative material*

**Greece/Italy:** Nine males, One female, 1 juv. (MNHN, 770, syntypes (?) of *P. geniculatus*), 'Corfu, Sicilia, Spain' [no precise locality on the original label]; Two males, One female (IZW), Cogoletto, ~400 m a.s.l., 29.v.1966, M. Y. Prószyński. **France:** Four males (IZW), Vaucluse Distr., Durance River, 17.v.1966, M. Y. Prószyński; One male, one female, one juv. (MNHN) 'Cavalaire (Var), Pyrenées Orientales, Banyuls sur Mer, 1914'. **Algeria:** One female (MNHN, det. hitherto by E. Simon as *P. ravoisiaei* Lucas), 'Algerie'; One female (MNHN, 12993, det. hitherto as *P. levaillanti*), 'Tebessa'.

#### ***Pellenes (Pelmultus) gobiensis*** (Schenkel, 1936) comb. nov.

*Pellenes gobiensis* Schenkel, 1936: 11, figure 108 (female holotype from the SMNH, examined). *Pellenes gobiensis*: Wesołowska, 1981: 152–153, figures 70–71; Logunov, 1992: 60–61, figure 5a–h.

#### *Diagnosis and description*

See Logunov (1992).

#### *Distribution*

At present, this species has been recorded from Mongolia, Tuva, SE Altai (Logunov, 1992) and Magadan Area (Logunov and Marusik, 1994).

#### *Habitat*

In Tuva and Mongolia, the species was collected in desert nanophanerophyte steppe (= tar steppe) with *Nanophyton erinaceus* (Logunov, 1992).

#### *Material examined*

**Mongolia:** One male (ISE), Tov Aimak, Bayankhangai Somon, 47°20'N 105°24'E, ~1200 m a.s.l., 21–25.v.1997, Y.M.

Other material studied see Logunov (1992).

#### ***Pellenes (Pelmultus) karakumensis*** sp. nov.

(Figures 91, 154–158)

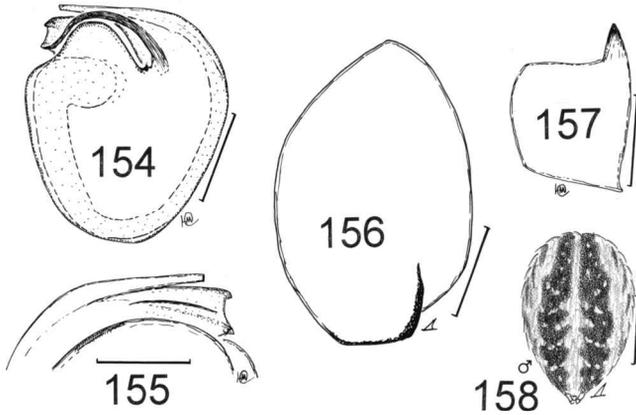
Male HOLOTYPE (ISE, one palp (absent)) from Turkmenistan: Repetek Reservation, spring 1971, G. T. Kuznetsov.

#### *Etymology*

The species is named after the Karakumy desert, where the type locality is situated.

#### *Diagnosis*

This species shows a most peculiar structure of the CTA (fan-shaped, figure 154) and the short, cone-shape tibial apophysis (figure 157), both characters clearly distinguishing *P. karakumensis* from all known congeners in *Pelmultus*.



FIGS 154–158. Male genitalia and abdomen of *Pellenes karakumensis* sp. nov. (holotype from Turkmenistan, Repetek): (154) Bulbouse, ventral view; (155) Embolic division, ventral view; (156) Cymbium; (157) Tibial apophysis, retrolateral view; (158) Abdomen, dorsal view. Scale bars: genitalia 0.1 mm; abdomen 0.5 mm.

#### *Distribution*

The type locality only (figure 91).

#### *Habitat*

The species is a dweller of sandy desert (barkhan sands and sand dunes).

#### *Description*

*Male* (HOLOTYPE, the specimen is rather damaged, e.g. legs I and II are absent). Measurements. Carapace 1.25 long, 1.00 wide, 0.53 high at PLE. Ocular area 0.63 long, 0.75 wide anteriorly and 0.80 wide posteriorly. Diameter of AME 0.20. Abdomen 1.20 long, 0.75 wide. Cheliceral length 0.40. Length of leg segments: leg III: 0.88+0.50+0.63+0.50+0.38; leg IV: 0.63+0.30+0.43+0.48+0.38. Leg spination. Leg III: Fm d. 0-1-2-2; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt pr. and rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 1ap.; Mt d. 1-2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace light brown, with black around eyes. Eye field yellow. Clypeus yellowish, densely covered with long white hairs. Sternum, labium and maxillae brownish yellow. Chelicerae light brown, but dark brown anteriorly. Abdomen grey-yellow, dorsum as in figure 158. Book-lung covers and spinnerets yellow. Legs (III and IV) yellow. Palpal structure as in figures 154–157.

#### *Pellenes (Pelmultus) nigrociliatus* (Simon in L. Koch, 1875) comb. nov.

(Figures 74–76, 92, 172–179)

*P. nigrociliatus* Simon in L. Koch, 1875: 14, t.1, figures 9–11 (syntypes (?) from the MNHN, examined).

*P. tauricus* Thorell, 1875: 116 (male lectotype from the SMNH, examined). New Synonymy.

*P. tauricus*: Kharitonov, 1969: 130; Nenilin, 1984a (*pro parte*): 23–24; 1984b: 134; 1985 (*pro parte*): 130.

*P. tocharistanus*: Ovtsharenko and Fet, 1980: 445 (misidentification).

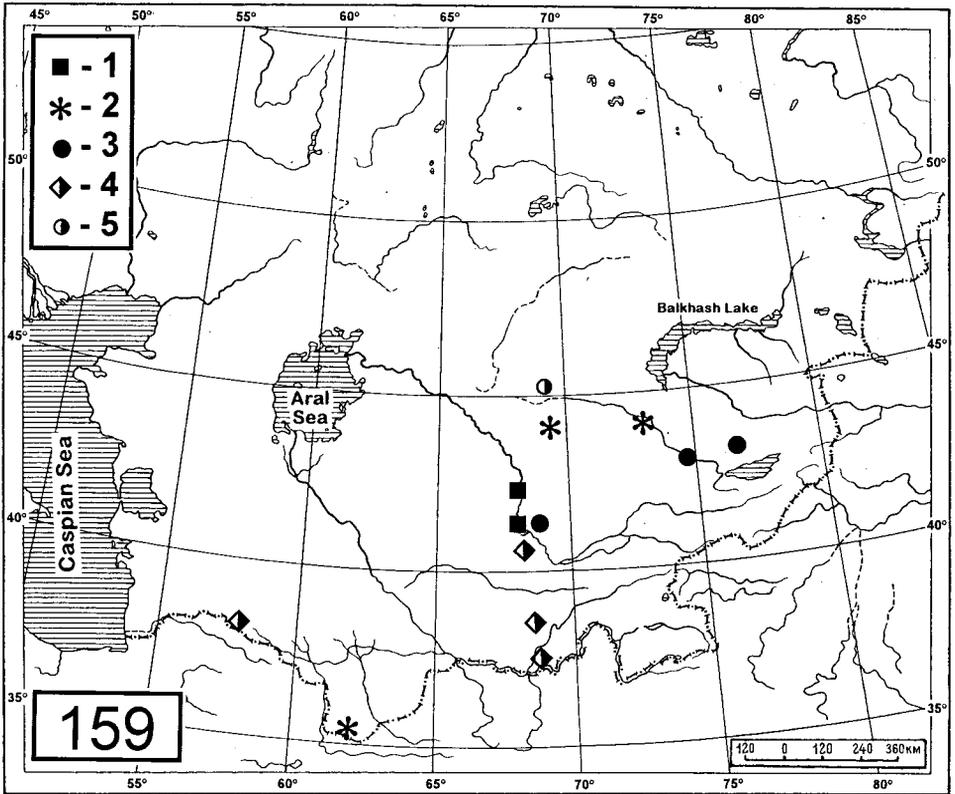


FIG. 159. Collection localities of *Pellenes* spp. in Central Asia: (1) *P. dilutus*; (2) *P. amazonka*; (3) *P. pseudobrevis*; (4) *P. tocharistanus*; (5) *P. tripunctatus*. One dot may represent more than one close locality.

*Diagnosis*

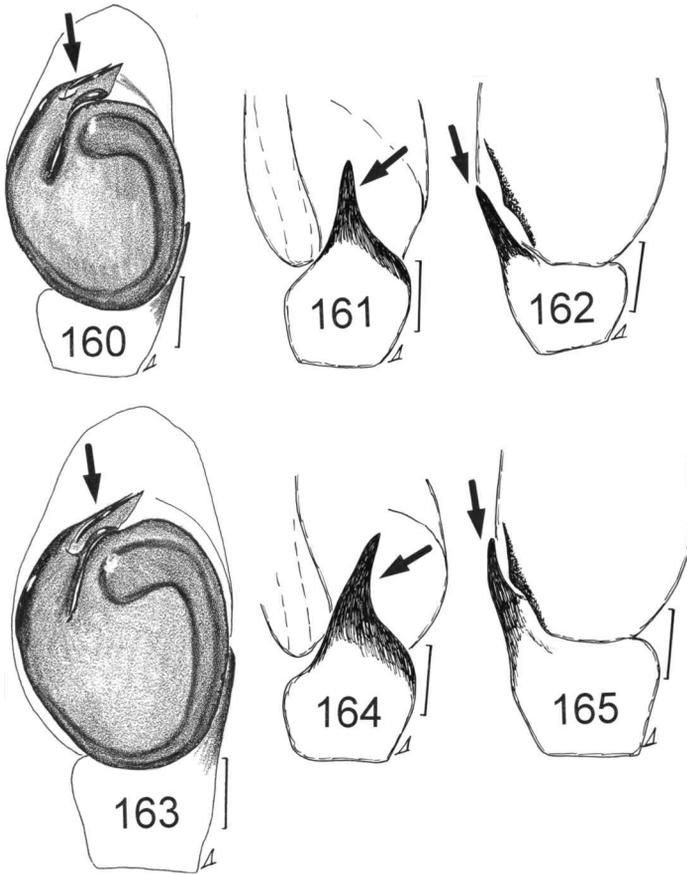
This species is most closely related to *Pellenes tocharistanus*. Males can be separated by the relative size of the bulbi, fine details in the embolic division (arrowed in figures 71, 74, see also 176) and the carapace coloration (cf. figures 84, 85). Females are easily separable by shape of the CBP (figures 167, 168 vs 172, 177) and by the carapace coloration (significant characters arrowed in figures 171, 178, 179).

*Distribution*

This seems to be a S. European–Central Asian sub boreal species. In Central Asia (figure 92), *Pellenes nigrociliatus* has so far been reported from Kyrghyzstan: Sary-Bulak (Nenilin, 1984b: sub. *P. tauricus*); and Uzbekistan: Shakhrisayb (Kharitonov, 1969; Nenilin, 1984a: sub. *P. tauricus*).

Records of *P. nigrociliatus* in China (Xinjiang) (see Zhou and Song, 1988: figure 7; Hu and Wu, 1989: figure 297; Peng *et al.*, 1993) need confirmation through reference to the original material, as judging by the figures given by the above authors these records could belong to *P. epularis* or a related species.

Occurrence of *P. nigrociliatus* in Japan (Yaginuma, 1970) has already been considered to be doubtful (see Prószyński, 1971).



FIGS 160–165. Male palps of *Pellenes brevis* Simon, 1868 (lectotype from France) (160)–(162) and *P. pseudobrevis* sp. nov. (holotype from Kazakhstan, Georgievka) (163)–(165): (160), (163) Ventral view; (161), (164) Retrolateral view; (162), (165) Dorsal view. Scale bars: 0.1 mm.

#### *Habitat*

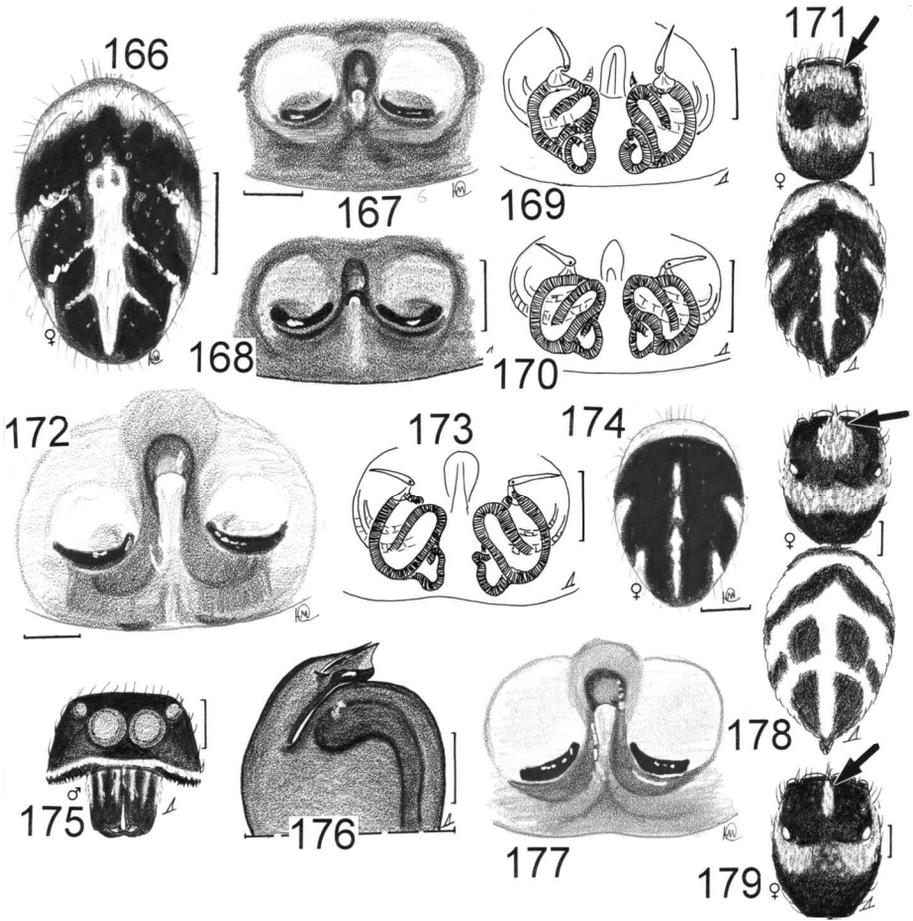
In Turkmenistan, the species was collected in pistache-woodlands (Badkhyz) and listed by Ovtsharenko and Fet (1980: sub. *P. tocharistanus*) for the tall herbaceous dry steppe (= semisavanna) with *Ferula badzakema*, *Poa bulbosa* and *Carex pachystylis* (SW Kopetdagh); in Lenkoran, *P. nigrociliatus* is found to occur in the broad-leaved forest.

#### *Notes*

Prószyński (1990) synonymized *Pellenes tauricus* with *P. simoni*, but the current study has clearly shown it is a junior synonym of *P. nigrociliatus*.

#### *Description*

*Male* (from Azerbaijan, Kazakh). Measurements. Carapace 2.25 long, 1.75 wide, 1.10 high at PLE. Ocular area 1.18 long, 1.33 wide anteriorly and 1.45 wide posteriorly. Diameter of AME 0.43. Abdomen 2.15 long, 1.65 wide. Cheliceral length 0.95. Length of leg segments: leg I: 1.63+0.85+1.28+0.80+0.48; leg II:



FIGS 166–179. Genitalia and somatic characters of *Pellenes tocharistanus* Andreeva, 1976 (166)–(171) and *P. nigrociliatus* (Simon in L. Koch, 1875) (172)–(179): (166), (174) Female abdomen, dorsal view; (167), (168), (172), (177) Epigyne, ventral view; (169), (170), (173) Spermathecae, dorsal view; (171), (178) Female body coloration, dorsal view; (175) Male clypeal coloration; (176) Embolic division; (179) Female carapace coloration. Specimens: (166)–(171) Tajikistan, Dushanbe; (172)–(174) Terekshtau (?); (175) Turkmenistan, SW Kopetdagh; (176), (177) The Crimea; (178) Azerbaijan, Lenkoran; (179) Azerbaijan, Kazakh. Scale bars: genitalia 0.1 mm; abdomen, carapace and male face 0.5 mm.

1.05+0.58+0.58+0.50+0.38; leg III: 1.55+0.85+0.83+0.73+0.45; leg IV: 1.15+0.55+0.61+0.70+0.70. Leg spination. Leg I: Fm d. 0-1-1-3ap.; Pt pr. 0-1-0; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-4; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1 v. 2ap.; Mt d. 1-0, pr. and rt. 1-2ap., v. 2ap. Leg IV: Fm d. 1-1-1; Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2ap. Coloration. Carapace dark brown, with two yellow patches behind PLEs, each covered with white scales. Black around eyes. Clypeus brown, with a thin transverse white line of scales (figure 175). Sternum brown. Maxillae, labium and chelicerae dark brown. Each chelicera with three vertical white scaly lines on frontal surface. Abdomen yellow-grey, dorsum as

in figure 85. Book-lung covers yellow-brown. Spinnerets brown. Legs brownish, leg I usually darker than others (figure 86). Palpal structure as in figures 74–76, 176.

*Female* (from Kyrgyzstan, Kumasan). Measurements. Carapace 2.50 long, 2.00 wide, 1.05 high at PLE. Ocular area 0.95 long, 1.40 wide anteriorly and 1.60 wide posteriorly. Diameter of AME 0.40. Abdomen 3.75 long, 2.60 wide. Cheliceral length 0.75. Length of leg segments: leg I: 1.25+0.75+0.88+0.63+0.63; leg II: 1.00+0.68+0.63+0.50+0.50; leg III: 1.75+1.00+0.88+0.75+0.75; leg IV: 0.88+0.63+0.79+0.88+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. 0-1-1-4; Pt pr. 0-1-0; Tb v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-4; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1 v. 1-2ap.; Mt d. 3-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt rt. 0-1-0; Tb rt. 1-1, v. 1-2ap.; Mt d. 1-2ap., pr. and rt. 1ap., v. 2ap. Coloration. Carapace brown, with a pair of pale yellow patches behind PLEs. Eye field dark brown, with a short median white line of scales (wide or narrow, figures 178, 179). Carapace margins with a row of vertical white scales. Clypeus yellowish, densely covered with white hairs. Sternum, labium and maxillae brown. Chelicerae dark brown. Abdomen grey brownish, dorsum as in figures 174, 178. Book-lung covers grey-yellow. Spinnerets brown. All legs yellowish brown, but tibiae and metatarsi darker (brown). Palps yellow, but basal parts of femora and coxae brown. Epigyne and spermathecae as in figures 172, 173, 177.

#### *Material examined*

**Azerbaijan:** One male, one female (ISE), Musaly Distr., Kazakh, 29.v.1981, A.Z.; Two females (ISE), Lenkoran Distr., Alexeevka env., Hyrkan Reservation, 13–20.vii.1983, D.L.; One male (ISE), Kashkachai, 24.vi.1977, P.D. **Kyrgyzstan:** One female (ZMMU), Tereklitau Mt. Range, Kumsay, 27.iv.1991, S.O. **Turkmenistan:** One male (ISE), SW-Kopetdagh, Garry-Gala [= Kara-Kala] env., Syunt-Khasardagski Reservation, 8–15.v.1982, N. S. Ustinova; One male (ISE), same locality, 28–29.iv.1993, D.L.; One female (ISE), Kalalegyoz Canyon, 31.v.1982, B. P. Zakharov; One male (ZISP), ca. 10 km W of Garry-Gala [= Kara-Kala], middle reaches of Sumbar River, 7.vi.1982, V. Y. Fet; One male (ISE), same area, Eldere, 23.iv–3.vi.1980, V. Y. Fet. **Tajikistan:** Two females (ZMMU), Gandzhina, 13–14.v.1967, E.A.

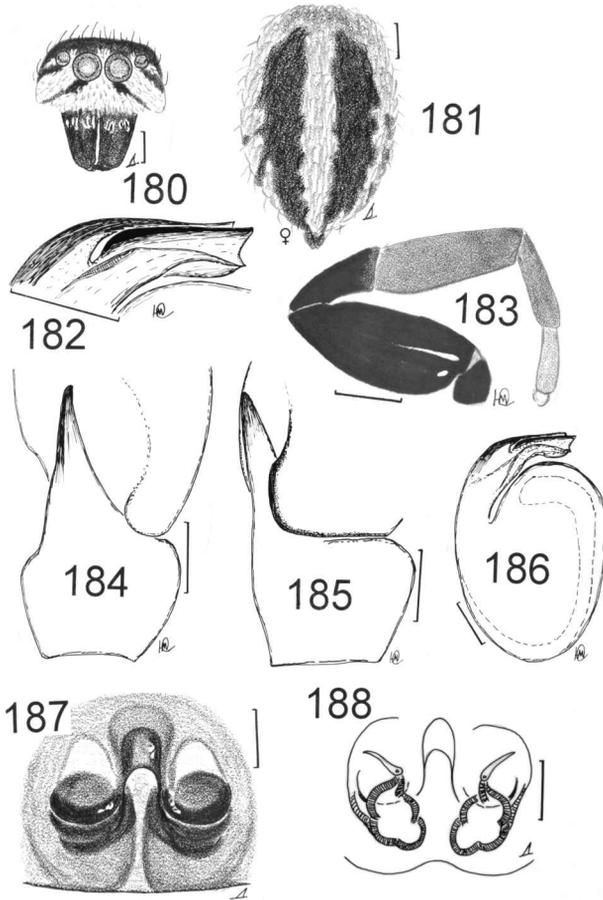
#### *Comparative material*

**The Crimea:** One male (SMNH, lectotype of *P. tauricus*, designated here), 'Jeny-Sala (A.l.o.Nordm.)'; One male (ZMHU, n373, paralectotypes of *P. tauricus*, designated here), 'Jeny-Sala, 6.v.1861, Pamanah. Tawria n 222; One female (ZMMU), Simferopol' Distr., Krasnolesie, 11.vii.1981, V. A. Bragina; One female (ZMMU), Belogorsk Distr., Karasyovka, 30.v.1981, V. A. Bragina; One female (ISE), Kerch, 20.vi.1990, O.L. **France:** Two females (MNHN, 3.101), 'Silesia, Zimmermann'; One male, four females (MNHN, syntypes of *P. nigrociliatus* (?), 777), 'Gallia'. **Italy:** Four females (MNHN), 'Italie, Marche'. **Czech Republic:** One female (IZW), 'Bohemia centralis', Kotis, 21.vi.1962, J. Buchar; One male (IZW), 'Bohemia centralis', Kozly, 23.vi.1962, J. Buchar. **Slovakia:** One female (IZW), 'Slovakia'.

#### *Pellenes (Pelmultus) pamiricus* sp. nov.

(Figures 91, 180–188)

Male HOLOTYPE (ISE) from Tajikistan: E. Pamir, Vakhanskiy Mt. Range, middle



FIGS 180–188. Genitalia and somatic characters of *Pellenes pamiricus* sp. nov. (male holotype and female paratype from Tajikistan, E. Pamir): (180) female clypeal coloration; (181) Female abdomen, dorsal view; (182) Embolic division, ventral view; (183) Male first leg, lateral view; (184) Tibial apophysis and cymbium (part), retrolateral view; (185) Tibial apophysis and cymbium (part), dorsal view; (186) Bulbouse, ventral view; (187) Epigyne, ventral view; (188) Spermathecae, dorsal view. Scale bars: (182), (184)–(188) 0.1 mm; (180), (181), (183) 0.5 mm.

reaches of Karadzhegasai (?) River, 4300 m a.s.l., 27.vi.1977, V. Turkov. PARATYPE: **Tajikistan**: One female (ISE), E. Pamir, Jashil'kul' Lake, 22.vii.1988, S.O.

*Etymology*

The specific epithet is derived from the type locality of the species, E. Pamir.

*Diagnosis*

Both genitalic (the strong embolic division, wide epigynal flaps and one-chambered spermathecae, see figures 184–188) and somatic (clypeal hairyness, figure 180) characters are diagnostic for this species.

*Distribution*

Tajikistan, E. Pamir only (figure 91).

*Notes*

The male and the female studied have been matched because of the similarity in coloration and size, as well as their localities are in E. Pamir.

*Description*

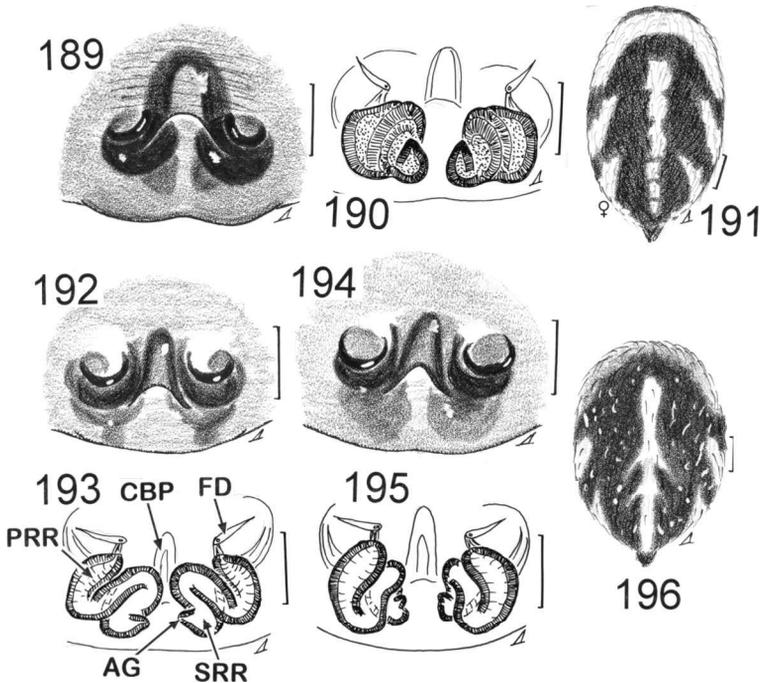
*Male* (HOLOTYPE). Measurements. Carapace 2.35 long, 1.50 wide, 0.85 high at PLE. Ocular area 0.90 long, 1.25 wide anteriorly and 1.35 wide posteriorly. Diameter of AME 0.40. Abdomen 1.90 long, 1.25 wide. Cheliceral length 0.85. Length of leg segments: leg I: 1.25+1.00+1.13+0.75+0.63; leg II: 1.00+0.63+0.64+0.50+0.50; leg III: 1.38+0.75+0.88+0.75+0.63; leg IV: 1.35+0.63+0.75+0.75+0.63. Leg spination. Leg I: Fm d. 0-0-1-3; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-0-1-2; Pt pr. 0-1-0; Tb pr. 1-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-3; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt rt. 0-1-0; Tb pr. 0-1, rt. 1-1-1, v. 1-2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown, sparsely covered with white scales. Black around eyes. Clypeus (and all face) densely covered with orange/red hairs. Sternum, labium, maxillae and chelicerae brown. Leg I: coxae, femur and patellae dark brown; other segments red brownish (figure 183). Legs II–IV dark brown, but metatarsi and tarsi yellowish. Abdomen grey-brownish, dorsally with a median white stripe. Book-lung covers yellow brownish. Spinnerets brown. Palp yellow-brown, but coxae and basal parts of femora dark brown. Palpal structure as in figures 182, 184–186.

*Female* (PARATYPE). Measurements. Carapace 2.0 long, 1.95 wide, 1.13 high at PLE. Ocular area 1.20 long, 1.40 wide anteriorly and 1.60 wide posteriorly. Diameter of AME 0.43. Abdomen 3.63 long, 2.60 wide. Cheliceral length 1.07. Length of leg segments: leg I: 1.38+0.81+0.98+0.58+0.50; leg II: 1.20+0.70+0.75+0.58+0.48; leg III: 2.03+0.95+1.11+0.90+0.65; leg IV: 1.68+0.83+0.93+1.05+0.63. Leg spination. Leg I: Fm pr. 2ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm pr. 3ap.; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-1ap., pr. 2ap.; Tb pr. and rt. 1-1, v. 1-2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Tb rt. 1-1, v. 1-2ap.; Mt pr. rt. and v. 1-2ap. Coloration. Carapace dark brown. Eye field almost black, sparsely covered with white scales forming a pair of longitudinal bands behind PLEs. Carapace margins with a row of vertical elongated white scales. Clypeus brown, densely covered with long white hairs (figure 180). Sternum, labium, maxillae and chelicerae yellow-brown to brown. Abdomen grey, dorsum as in figure 181. Book-lung covers and spinnerets yellow-brown. All legs yellow-brown, densely covered with white scales and long dark protruded hairs. Coxae and trochanters II–IV usually lighter. Palps yellow, but coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 187, 188.

***Pellenes (Pelmultus) pseudobrevis* sp. nov.**

(Figures 159, 163–165, 189–191, 208, 210–213)

Male HOLOTYPE (ISE) from Kazakhstan: Zhambyl Area, near Georgievka, 22.v.1984, S.O.



FIGS 189–196. Female genitalia and abdomens of *Pellenes pseudobrevis* sp. nov. (paratype from Kyrghyzstan, Malynovoye Canyon) (189)–(191) and *P. brevis* Simon, 1868 (paralectotype from France) (192)–(196): (189), (192), (194) Epigyne, ventral view; (190), (193), (195) Spermathecae, dorsal view; (191), (196) Abdomen, dorsal view. Scale bars: genitalia 0.1 mm; abdomen 0.5 mm.

*Etymology*

The specific epithet reflects the similarity of the new species with *Pellenes brevis* (see diagnosis).

*Diagnosis*

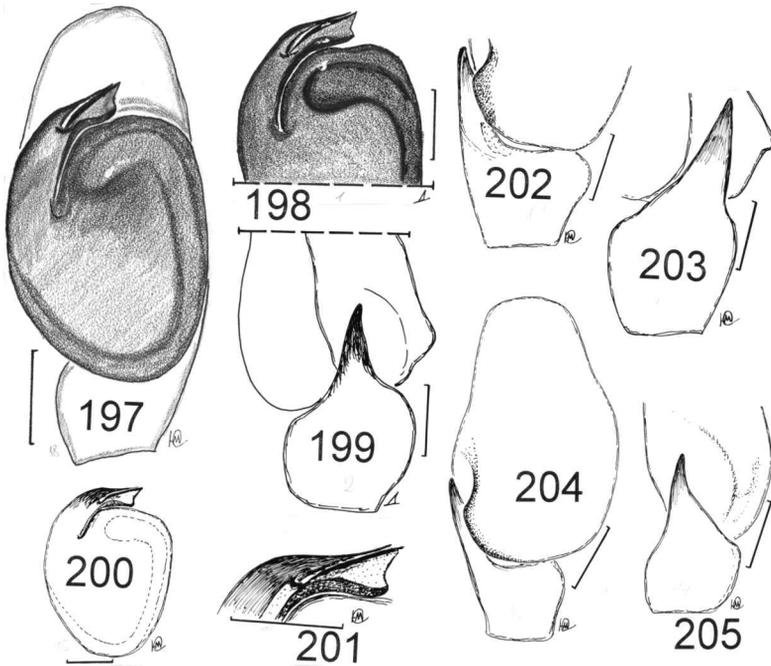
The new species is most closely related to *Pellenes brevis*, but can be separated by fine details in the male palpi (arrowed in figures 160–165) and clearly by the female genitalia (cf. figures 189, 190 and 192–195). See also comments under ‘Diagnosis’ of *P. allegrii*, which is another species similar to *P. pseudobrevis*.

*Distribution*

SE Kazakhstan, Uzbekistan and Kyrghyzstan (figure 159).

*Description*

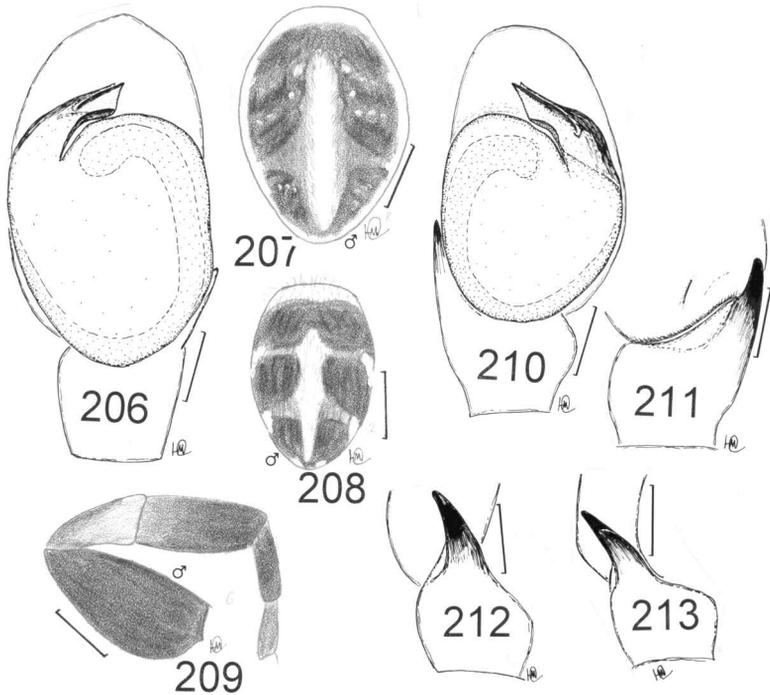
*Male.* Measurements (PARATYPE from Taskent Area, Dal’vezin). Carapace 1.75 long, 1.15 wide, 0.75 high at PLE. Ocular area 0.75 long, 0.95 wide anteriorly and 1.00 wide posteriorly. Diameter of AME 0.40. Abdomen 1.50 long, 1.00 wide. Cheliceral length 0.65. Length of leg segments: leg I: 0.75+0.50+0.63+0.48+0.38; leg II: 0.63+0.38+0.38+0.38+0.30; leg III: 0.88+0.50+0.63+0.50+0.38; leg IV: 0.75+0.38+0.50+0.50+0.38. Leg spination. Leg I: Fm d. 0-1-1-3; Pt 0-1-0; Tb pr. 0-1, v. 1-1-2; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-3; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2ap.;



FIGS 197–205. Male genitalia of *Pellenes tocharistanus* Andreeva, 1976: (197) Palp, ventral view; (198), (201) Embolic division, ventral view; (199), (203), (205) Tibial apophysis and cymbium (part), retrolateral view; (202), (204) Tibial apophysis and cymbium (part), dorsal view; (200) Bulbouse. Scale bars: 0.1 mm.

Mt v. 2-2ap. Leg III: Fm d. 0-0-2-4; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Leg IV: Fm d. 0-1-1-1; Pt rt. 0-1-0; Tb rt. 0-1, v. 2ap.; Mt d. 1-2ap., pr. and rt. 1ap., v. 2ap. Coloration. Carapace yellow brownish, with dark brown eye field, black around eyes and two small patches of white scales behind PLEs. Clypeus yellowish, with a thin white line of scales along its low edge. Sternum, maxillae, labium and chelicerae yellow brownish. Anteriorly, each chelicera with three vertical white lines. Abdomen grey-brown, dorsum as in figure 208. Book-lung covers yellow, tinged with brown. Spinnerets brownish. All legs yellow brownish. Femora, distal parts of tibia and metatarsi of legs I dark brown. Palpal structure as in figures 163–165, 210–213.

*Female* (PARATYPE from Kyrgyzstan, Malinovoye Canyon). Measurements. Carapace 2.23 long, 1.63 wide, 1.05 high at PLE. Ocular area 1.05 long, 1.26 wide anteriorly and 1.45 wide posteriorly. Diameter of AME 0.40. Abdomen 3.50 long, 2.35 wide. Cheliceral length 0.75. Clypeal height 0.20. Length of leg segments: leg I:  $1.18 + 0.63 + 0.95 + 0.58 + 0.40$ ; leg II:  $0.98 + 0.58 + 0.55 + 0.45 + 0.36$ ; leg III:  $1.55 + 0.83 + 0.75 + 0.73 + 0.48$ ; leg IV:  $1.25 + 0.63 + 0.69 + 0.75 + 0.45$ . Leg spination. Leg I: Fm d. 3ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 2ap.; Tb v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-1, pr. 0-1-1-1; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1-2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm d. 2ap.; Pt rt. 0-1-0; Tb rt. 1-1, v. 1-2ap.; Mt pr. 1-2ap., rt. 1-1-2ap., v. 2ap. Coloration. Carapace brown, with two yellowish patches behind PLEs densely covered with white hairs. Eye field black. There is a white short median band at the front of eye field. Clypeus brown, densely covered with white hairs. Sternum and maxillae yellow-brown. Labium and



FIGS 206–213. Male palps of *Pellenes brevis* Simon, 1868 (specimen from Poland) (206), (207), (209) and *P. pseudobrevis* sp. nov. (paratype from Uzbekistan, Dal'vezin) (208), (210)–(213): (206), (210) Palp, ventral view; (207), (208) Abdomen, dorsal view; (209) First right leg, lateral view; (211)–(213) Tibial apophysis and cymbium (part), dorsal (211) and retrolateral (212), (213) views. Scale bars: palps 0.1 mm; abdomen 0.5 mm.

chelicerae brown. Abdomen: dorsum as in figure 191; sides brownish with sloping yellow stripes; venter yellow. Book-lung covers and spinnerets yellow brownish. Leg I brown, other legs yellow brownish. Palps yellow, but coxae and basal parts of femora brown. Epigyne and spermathecae as in figures 189–190.

*Material examined*

PARATYPES: **Uzbekistan**: 1 male (ISE), Tashkent Area, Bekabad Distr., Dal'vezin, riverside of Syrdarya, 20.vi.1981, A.N. **Kyrgyzstan**: 1 female (ISE), ca. 20 km S of Bishkek, Kirgizskiy Mt. Range, Malinovoye Canyon, 28.vii.1984, S.O.

***Pellenes (Pelmultus) tocharistanus* (Andreeva, 1976) comb. nov.**

(Figures 71–73, 83, 84, 159, 166–171, 197–205)

*P. tocharistanus* Andreeva, 1976: 86, figures 106–109 (male holotype from the ZMMU, examined, figures 198–199).

*P. tocharistanus*: Nenilin, 1985: 130.

Male HOLOTYPE (ZMMU) from Tajikistan: Taldy-Kurgan Pass, 15–16.v.1967, E.A.

*Diagnosis*

See comments under 'Diagnosis' of *Pellenes nigrociliatus*.

*Distribution*

E. Turkmenistan, SE Uzbekistan and Tajikistan (figure 159).

*Habitat*

In C. Kopetdagh, this species has been collected in shibliak at the semidesert belt and in mountain dry steppe; according to Andreeva (1976), in Tajikistan, *P. tocharistanus* occurs in the bunchgrass semisavanna with *Hordeum bulbosum*.

*Description*

*Male* (measurements and leg spination—holotype; coloration—male from Dushanbe). Measurements. Carapace 1.60 long, 1.20 wide, 0.75 high at PLE. Ocular area 0.75 long, 1.00 wide anteriorly and 1.05 wide posteriorly. Diameter of AME 0.40. Abdomen 1.75 long, 1.00 wide. Cheliceral length 0.50. Length of leg segments: leg I: 0.88+0.60+0.68+0.50+0.38; leg II: 0.63+0.43+0.50+0.35+0.43; leg III: 1.13+0.58+0.65+0.58+0.63; leg IV: 1.00+0.43+0.58+0.63+0.63. Leg spination. Leg I: Fm d. 0-1-1-3; Tb v. 1-1; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-2; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 0-0-1-2; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 1ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Pt pr. and rt. 0-1-0; Tb pr. 0-1-0, rt. 1-1, v. 1ap.; Mt d. 2ap., pr. and rt. 1ap., v. 1-2ap. Coloration. Carapace dark brown. Eye field with a transverse white band of scales (figure 84). Same band is behind PLEs. Clypeus brown, with a thin transverse white line of scales. Sternum yellow-brown. Labium and maxillae brown to dark brown. Chelicerae brown, with six vertical white lines of scales on their anterior surface. Abdomen grey-brown, dorsum as in figure 84. Book-lung covers grey. Spinnerets brown. Leg I yellow brownish, but apical part of tibia, metatarsus and proximal part of tarsus dark-brown (figure 83). Legs II–IV yellow-brown; their femora usually dark brown, each with a yellow dorsal stripe. Palpal structure as in figures 70–73 (holotype), 197–205.

*Female* (from Dushanbe). Measurements. Carapace 2.00 long, 1.50 wide, 0.85 high at PLE. Ocular area 0.80 long, 1.15 wide anteriorly and 1.25 wide posteriorly. Diameter of AME 0.40. Abdomen 3.00 long, 2.00 wide. Cheliceral length 0.75. Length of leg segments: leg I: 1.00+0.50+0.75+0.50+0.50; leg II: 0.75+0.48+0.50+0.41+0.41; leg III: 1.38+0.70+0.75+0.63+0.50; leg IV: 1.00+0.50+0.63+0.63+0.58. Leg spination. Leg I: Fm d. 2ap.; Tb v. 2-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 2ap.; Tb pr. 0-1, v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 3ap.; Pt rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2-2ap. Leg IV: Tb rt. 1-1, v. 1-2ap.; Mt d. 2-2ap., pr. and rt. 1ap., v. 2ap. Coloration. Carapace brown to dark brown, with eye field densely covered with white scales. Two yellowish patches and a transverse white band of scales behind PLEs. Clypeus yellowish, densely covered with white hairs. Sternum, labium, maxillae and chelicerae brown to dark brown. Abdomen grey brownish, dorsum as in figures 166, 171. Book-lung covers yellow greyish. Spinnerets brown. Leg I dark brown, legs II–IV yellow-brown. Dorsal sides of femora II–IV often yellow. Epigyne and spermathecae as in figures 167–170.

*Material examined*

**Tajikistan:** One female (ZMMU, paratype of *P. tocharistanus*), Dushanbe, vi.1968, E.A.; One male, one female (ISE), Dushanbe, 13.iv.1991, S.O.; Two females (ISE), Taldy-Kurgan Area, Gandzhina, 13–14.v.1967, E.A. **Turkmenistan:** One male (ISE), ca. 5 km S of Firyuza, 21.v.1987, V.D.; One male (ISE), near Firyuza, 2.iv.1991, V.D. and V. K. Zinchenko. **Uzbekistan:** One male (ISE), Syrdaria Area, Akaltyn Distr., x.1980, A.N.

**Redescription of some additional species*****Pellenes (Pelmultus) brevis* (Simon, 1868) comb. nov.**

(Figures 77–79, 87, 88, 160–162, 192–196, 206, 207, 209)

*Attus brevis* Simon, 1868: 48 (lectotype and paralectotypes from the MNHN, examined).*P. sp.-1*: Prószyński, 1979: 315, figures 236–238.*Type material*

**France:** One male (MNHN, 774, lectotype, designated here), Two males, Eight females (MNHN, 774, paralectotypes, designated here), ‘Gallia’.

*Diagnosis*

See comments under ‘Diagnosis’ of *Pellenes allegri* and *P. pseudobrevis*.

*Distribution*

This species has so far been reported from France, Spain, Rhodes (Prószyński, 1990), Poland and the Crimean Peninsula (current data). The latter locality is based on Prószyński’s record of *Pellenes sp.-1* (Prószyński, 1979: figures 236–238). From Prószyński’s drawings only (cf. with figures 192–195), it is evident the author in fact dealt with *P. brevis* but not with *P. arcigerus* (Walckenaer, 1831) as reported by him later (Prószyński, 1990). So, *P. brevis* also occurs in the Crimean Peninsula, the easternmost locality for the species.

*Description*

**Male** (paralectotype from France). Measurements. Carapace 1.85 long, 1.35 wide, 0.80 high at PLE. Ocular area 0.85 long, 1.20 wide anteriorly and 1.18 wide posteriorly. Diameter of AME 0.38. Abdomen 1.78 long, 1.35 wide. Cheliceral length 0.60. Clypeal height 0.10. Length of leg segments: leg I: 1.10+0.55+0.70+0.50+0.35; leg II: 0.73+0.45+0.40+0.34+0.30; leg III: 1.28+0.63+0.65+0.60+0.38; leg IV: 0.88+0.44+0.45+0.48+0.38. Leg spination. Leg I: Fm d. 0-1-1-1ap., pr. 2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2ap.; Mt v. 2-2ap. Leg II: Fm d. 0-1-1-1ap., pr. 2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-2ap.; Mt v. 2-2ap. Leg III: Fm d. 2ap., pr. 1ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Pt rt. 0-1-0; Tb rt. 0-1-0, v. 2ap.; Mt pr. 2ap., rt. 1-2ap., v. 2-2ap. Coloration. Carapace brown, with black around eyes and two yellow spots behind PLEs. Clypeus light yellow, with a thin transverse line of white scales along the edge. Sternum brownish yellow, densely white haired. Maxillae and labium brown. Chelicerae brown, each with three vertical lines of white scales. Abdomen yellow brownish, with dorsum as in figures 88, 207. Book-lung covers

yellow. Spinnerets brownish. Leg I as in figures 87, 209. Other legs yellow. Palpal structure as in figures 77–79, 160–162.

*Female* (paralectotype from France). Measurements. Carapace 2.33 long, 1.83 wide, 1.08 high at PLE. Ocular area 1.15 long, 1.28 wide anteriorly and 1.50 wide posteriorly. Diameter of AME 0.40. Abdomen 3.08 long, 2.20 wide. Cheliceral length 0.93. Clypeal height 0.13. Length of leg segments: leg I: 1.25+0.75+0.78+0.60+0.45; leg II: 1.03+0.68+0.55+0.50+0.38; leg III: 1.85+0.90+0.98+0.78+0.50; leg IV: 1.28+0.70+0.78+0.75+0.50. Leg spination. Leg I: Fm pr. 2ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm pr. 2ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 1ap., pr. 0-1-1ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. 1-2ap., rt. 1-1-2ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb rt. 1-1, v. 1-2ap.; Mt pr. and rt. 1-2ap., v. 2ap. Coloration is described for males, but differing in the following details: clypeus yellow, densely white haired; dorsum as in figure 196; palpi completely yellow; and spinnerets yellow. Epigyne and spermathecae as in figures 192–195.

#### *Material examined*

**Poland** (?): Two males (IZW), ‘Xackobo, 8.ix.1950, A. Reidel [label illegible]’; Three males (IZW), ‘Divmidka (?) ... [label illegible]’.

#### ***Pellenes campylophorus*** (Thorell, 1875)

*Attus campylophorus* Thorell, 1875: 116, 186 (the holotype from the ZMHU, examined).

*Pellenes campylophorus*: Nenilin, 1985: 130; Prószyński, 1990: 256; Mikhailov, 1997: 250.

HOLOTYPE (an immature specimen) (ZMHU, 29774) from the Crimean Peninsula: ‘Tauria, Sympheropol, 9.x.1860’.

#### *Notes*

*Pellenes campylophorus* (Thorell, 1875) was described and then repeatedly listed from the Crimean Peninsula as a valid species (Thorell, 1875; Nenilin, 1985; Prószyński, 1990; Mikhailov, 1997). However, a re-examination of the holotype of *P. campylophorus* showed it to be an immature specimen and hence the species name is to be considered *nomen dubium*.

#### ***Pellenes (Pelmultus) canosus*** (Simon, 1937) comb. nov.

(Figures 107–110)

*P. canosus* Simon, 1937: 1233, 1269, figure 1995 (female holotype from the MNHN, examined).

Female HOLOTYPE (MNHN, 29774) from France: ‘Banyuls’.

#### *Diagnosis*

See comments under ‘Diagnosis’ of *Pellenes borisi*.

#### *Distribution*

The type locality only.

#### *Description*

*Female* (HOLOTYPE). Measurements. Carapace 2.53 long, 1.83 wide, 1.05 high at PLE. Ocular area 1.15 long, 1.45 wide anteriorly and 1.51 wide posteriorly.

Diameter of AME 0.45. Abdomen 2.88 long, 2.10 wide. Cheliceral length 0.68. Clypeal height 0.14. Length of leg segments: leg I: 1.20+0.83+0.80+0.60+0.43; leg II: 1.05+0.65+0.55+0.48+0.50; leg III: 1.78+0.95+0.85+0.78+0.53; leg IV: 1.33+0.63+0.75+0.78+0.48. Leg spination. Leg I: Fm pr. 2ap.; Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Fm d. 1ap., pr. 1ap.; Pt pr. 0-1-0; Tb pr. 0-1, v. 1-1ap.; Mt v. 2-2ap. Leg III: Fm d. 2ap.; Pt pr. and rt. 0-1-0; Tb pr. and rt. 1-1, v. 2ap.; Mt pr. 1-2ap., rt. 2-2ap., v. 2ap. Leg IV: Pt rt. 0-1-0; Tb rt. 1-1, v. 2ap.; Mt pr. and rt. 2ap., v. 1-2ap. Coloration. Carapace yellowish brown, with black around eyes and a pair of yellow spots behind PLEs. All the carapace evenly covered with white scales. Clypeus densely white haired. Sternum yellow. Maxillae and labium brown-yellow. Chelicerae dark brown. Abdomen yellow, with dorsal colour-markings as in figure 110. Book-lung covers yellow. Spinnerets yellow, tinged with brown. All legs and palpi yellow, but three distal segments of leg I contrastingly brown (figure 107). Epigyne and spermathecae as in figures 108, 109.

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