

Definition of the spider genus *Talavera* (Araneae, Salticidae), with a description of a new species

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Abstract

The spider genus *Talavera* PECKHAM & PECKHAM is defined. Morphological characters of copulatory organs and relationships of *Talavera* are discussed. Four new combinations (*Talavera aequipes*, *Talavera thorelli*, *Talavera monticola* and *Talavera trivittata*) are proposed; and new species, *Talavera esyunini*, from the Urals is figured and described.

Keywords: Araneae, Salticidae, taxonomy.

Introduction

The spider genus *Talavera* PECKHAM & PECKHAM, 1909 belongs to the subfamily *Euophryinae* (sensu PRÓ-SZYŃSKI, 1976). Up to now it included only the type species, *Talavera minuta* (BANKS, 1895), which occurs in the USA and Canada (RICHMAN, CUTLER, 1978) and in the Magadan Area of the USSR (MARUSIK, 1988).

In this paper, 6 species are included in the genus *Talavera*, of which one is new to science. Four others were originally described in the genus *Euophrys* C.L. KOCH, 1834. The genus *Euophrys* (s. str.), i.e. the "frontalis" species group only, is here interpreted as the sister group of *Talavera*. The standard abbreviations and the names of parts of the copulatory organs used in this paper are those used by GRISWOLD (1987), WANLESS (1988) and DAVIES & ZABKA (1989), and for the leg spination the system adopted is that used by ONO (1988). All measurements are in mm.

The type material has been shared between the collections of the Zoological Museum of the Moscow State University, Moscow (ZMMU); Zoological Museum of the Institute of Biology, Novosibirsk (BI); Dept. of Zoology of the Perm State University, Perm (PSU); and the Royal Belgian Institute for Natural Science (RINS).

Genus *Talavera* PECKHAM & PECKHAM, 1909

Type species: *Talavera minuta* (BANKS, 1895)

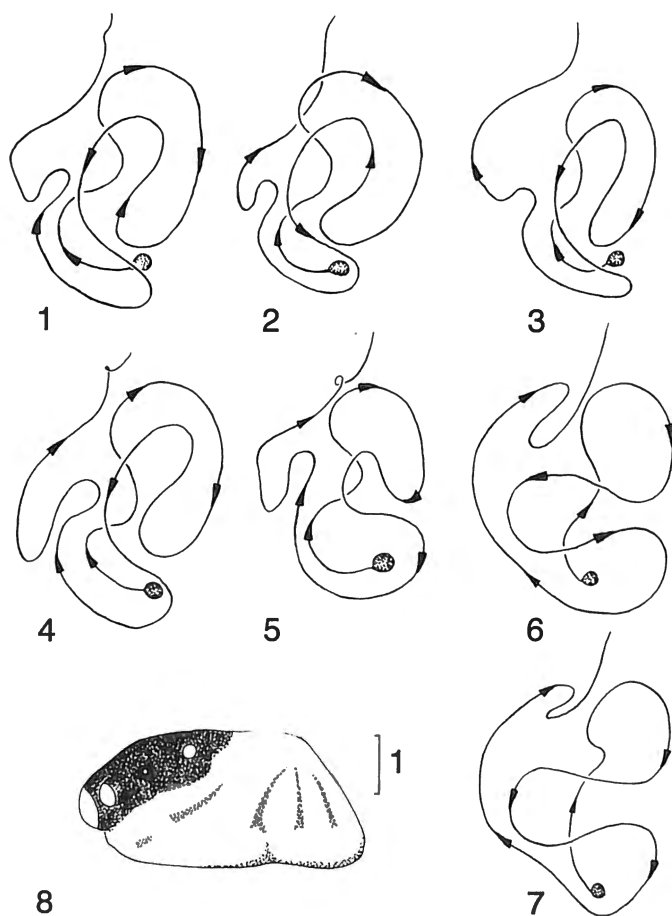
Definition:

Small spiders ranging from about 2.5 to 3 mm in length. Sexual dimorphism not marked; the only differences between males and females are the dark-brown prolateral sides of femur, patella and tibia of the leg I in males. Carapace: moderately high (fig. 8); brownish with black eye-field, covered with pale adpressed hairs; fovea absent; eye-field of transverse-rectangular, with its length 1.5-1.7 times smaller than width. Eyes: AME > ALE > PLE > PME. Clypeus: vertical, low; its height half AME-diameter in males, 3-4 times as small in females. Chelicerae: vertical, small; promargin with 2 teeth, retromargin with 1 tooth. Maxillae: tranverse, almost square. Labium: small, three-cornered, apex rounded and directed anteriorly. Sternum: oval. Abdomen: oval; length 1.5-2 times width; grey with dorsal markings composed of yellowish thin transverse lines or some longitudinal greyish-brown stripes (as in *T. trivittata*, see PAIK, 1986, figs. 1-2), covered with whitish hairs; males have, an inconspicuous scutum covering almost all the dorsal surface of abdomen. Legs: moderately short; yellowish with numerous brown rings; leg formula IV, III, I, II or IV, I, III, II. Female palp: without apical claws. Male palp: cymbium simple; tibia without apophysis (figs. 11, 14, 34); embolus with well-developed distal haematodocha (figs. 9-14); tegulum with distal sclerite which forms a flat (figs. 10, 13, 24) or rounded (fig. 34) convexity on the distal part of tegulum (function of this sclerite unknown); trajectory of sperm ducts complex (figs. 1-4); embolus straight or a little curved (figs. 10-13); embolus connected to tegulum by a solid chitinous ligament (figs. 25-27, 33). Epigynum: generally simple, weakly sclerotized with internal structures usually visible through the integument; copulatory openings very small, paired, covered with either paired rounded lids (fig. 15), or a single transverse chitinous fold (fig. 18); insemination ducts very thin, thread-like; spermathecae large, ovoid with lanceolate fertilisation ducts (figs. 16, 17, 21).

Affinities:

The genus *Talavera* PECKHAN & PECKHAM is here defined to include those species with the following uniquely shared characters: embolus straight or slightly curved (figs. 10, 13, 27); trajectory of sperm ducts complex (figs. 1-4); distal sclerite present (figs. 10, 13, 24); solid chitinous ligament of embolus present (figs. 24-27, 34); insemination ducts thin, thread-like, without a spiral twisting (fig. 16). These characters appear to be good synapomorphies for the members of *Talavera*.

The genus *Euophrys* (s. str.), as I understand it, seems to be a sister group of the genus *Talavera*. *Euophrys* (sensu stricto)* shares the following characters: very thin tibial apophysis (fig. 29: *E. proszynskii* LOG et al.) and coiled embolus in males; spiral twisted insemination ducts in females (fig. 20). Besides that, *Euophrys* shows a strongly pronounced sexual dimorphism, which has never been observed in *Talavera*.



Figs. 1-8 — Schematic drawings of the trajectory of sperm duct (1-7) and carapace of male (8).

1. *Talavera minuta*; 2, 8. *Talavera esyunini*; 3. *Talavera thorelli*; 4. *Talavera aequipes*; 5. *Euophrys petrensis*; 6. *Euophrys frontalis*; 7. *Euophrys monadnock*. The last two species have a simpler sperm duct trajectory than those of the members of *Talavera*.

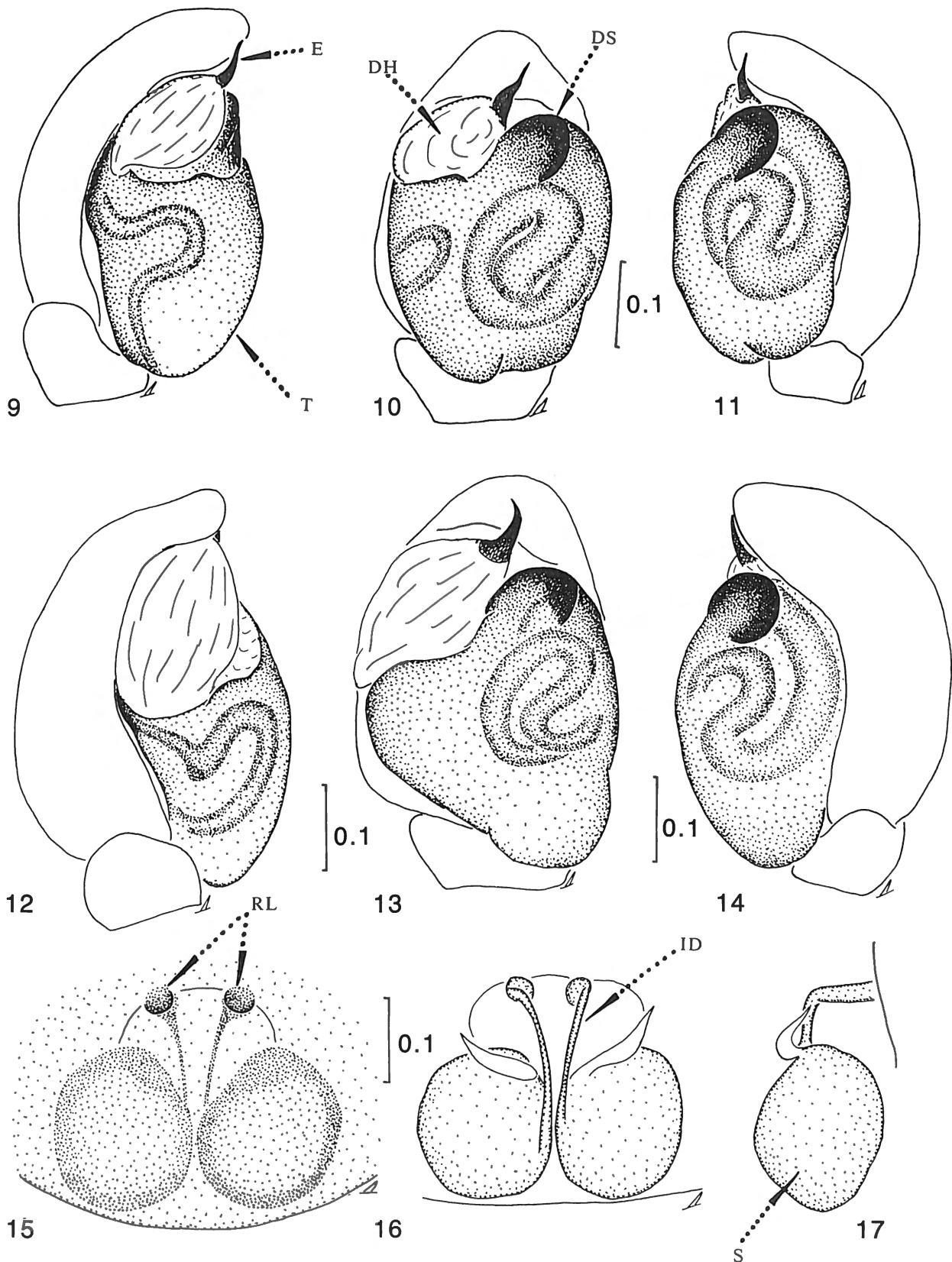
The fact that the species *E. petrensis* is difficult to refer to *Euophrys* or *Talavera* reflects the affinity between these genera. For instance, *E. petrensis* shares with *Talavera* the complex trajectory of sperm ducts (fig. 5) and lack of a tibial apophysis in males, but retains chitinous “rings” in the epigynum (fig. 19) and twisted insemination ducts (fig. 20) in females that indicate its similarity with *Euophrys*. Besides that, *E. petrensis* shows clear sexual dimorphism, as in all true *Euophrys*. It is possible that *E. petrensis* may be referred to the genus *Talavera*, but I delay accepting it until the whole genus *Euophrys* (s. lat.) is revised, especially as there are other species of *Euophrys* without a tibial apophysis, for instance, *E. gambosa*.

It is necessary to comment on the solid chitinous ligament in particular. This sclerotized ligament is a rigid rod, situated within the wall of the distal haematodocha, which joins the embolus directly to the distal end of the tegulum. Because of this solid ligament, the distal haematodocha is expanded during palp inflation without spiral twisting and protrudes to one side as a slightly curved, translucent sac (figs. 24, 25). This shape of expanded distal haematodocha is typical of the species having a straight (*T. minuta*) or almost straight (*T. esyunini*, *T. thorelli*) embolus.

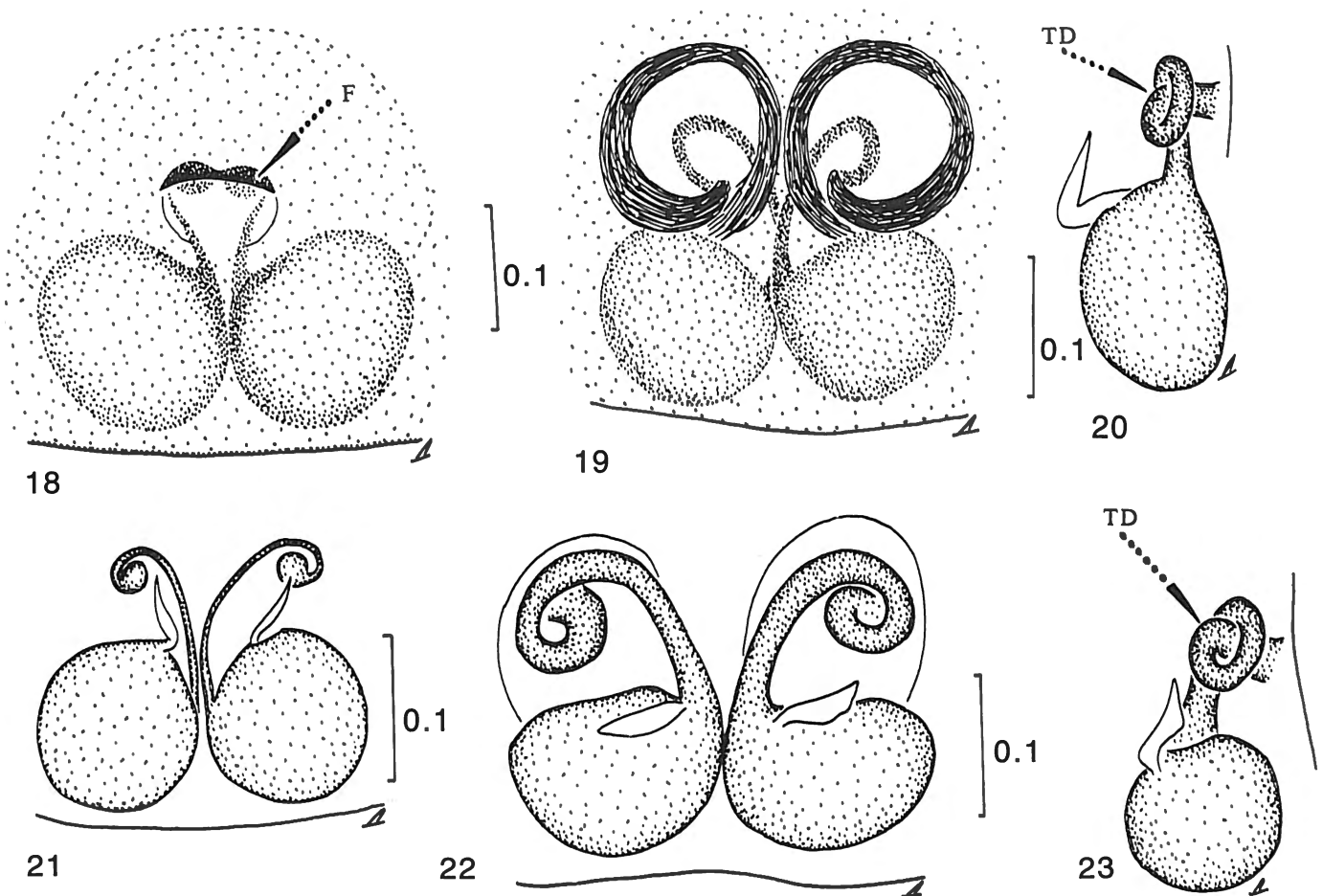
All species of the genus *Euophrys* (s. str.) lack such a solid ligament and have a coiled embolus joined to the tegulum only by a haematodocha. In this group the retrolateral side of the distal haematodocha is only slightly sclerotized and morphologically more complex than in the genus *Talavera*. It consists of a number of thin transverse chitinous ridges displaced relative to each other (fig. 31). Due to the structure of the membranous wall, the completely expanded distal haematodocha appears spiral, like a Helix-shell, for instance in *E. flavoatra* (GR.) and *E. proszynskii* LOG. et al. (figs. 28-30).

The solid ligament is slightly sclerotized in *T. aequipes*, because its expanded distal haematodocha has an identical shape to that in *Euophrys*, i.e. a “spiral shell” (fig. 32). This is not a serious argument against including *T. aequipes* in the genus *Talavera*, since all the remaining characters, such as the complex trajectory of the sperm ducts (fig. 4); the presence of distal sclerite (bump like) (fig. 34); and the vulva structure (fig. 21), are evidence of our conclusion. The type of inflation of the distal haematodocha is most probably dependant on the shape of the embolus, and reflects some functional peculiarities

(* The genus *Euophrys* (s. lat.) as currently defined (GALIANO, 1962, 1968; PRÓSZYŃSKI, 1976; ŻABKA, 1985) undoubtedly is a paraphyletic taxon. I suggest that at least the members of the “erratica” species group (*erratica*, *iwatensis*, *obsoleta*, *lanigera* and others) and many South-American species (*a-notata*, *laetata*, *tehuelche*, *mapuche* and others) should be transferred from *Euophrys* (s. str.). The genus *Euophrys* (s. str.) should probably be limited to the “frontalis” species group only. A full consideration of this problem is beyond the scope of the present study and will be addressed later.



Figs. 9-17 – Copulatory organs of *Talavera minuta* (9-11) and *Talavera esyunini* (12-17), male-holotype, female-paratype. 9, 12 - left palp, prolateral view; 10, 13 - ditto, ventral view; 11, 14 - ditto, retrolateral view; 15 - epigynum; 16 - vulva, ventral view; 17 - spermathecae, lateral view. Abbreviations: e - embolus, t - tegulum, ds - distal sclerite, dh - distal haematodocha, rl - rounded lids of epigynum, id - insemination ducts, s - spermathecae.



Figs. 18-23 – Female copulatory organs of *Talavera* and *Euophrys*.

18 - *Talavera thorelli*, epigynum, ventral view; 19-20 - *Euophrys petrensis*, epigynum ventral view; and spermathecae, lateral view; 21 - *Talavera aequipes*, vulva, ventral view; 22, 23 - *Euophrys frontalis*, vulva, ventral and lateral views. Abbreviations: f - chitinous fold of epigynum, td - twisted insemination duct.

of the palp during mating. If so, the spiral form of the expanded distal haematodocha in *T. aequipes* is a good example of homoplasy between *Talavera* and *Euophrys*. *T. aequipes*, as well as *E. petrensis*, seems to occupy an intermediate position between *Talavera* and *Euophrys*, probably reflecting the close affinity of these genera.

Natural history:

Within the Palaearctic region the species of this genus may be found in the stony mountainous steppes (*T. thorelli* and *T. aequipes*); in alpine meadows (*T. monticola*) (after THALER, 1981); in mountainous shrub tundra (*T. esyunini*); and in larch coppice-forest with a moss-lichen-cover (*T. minuta*).

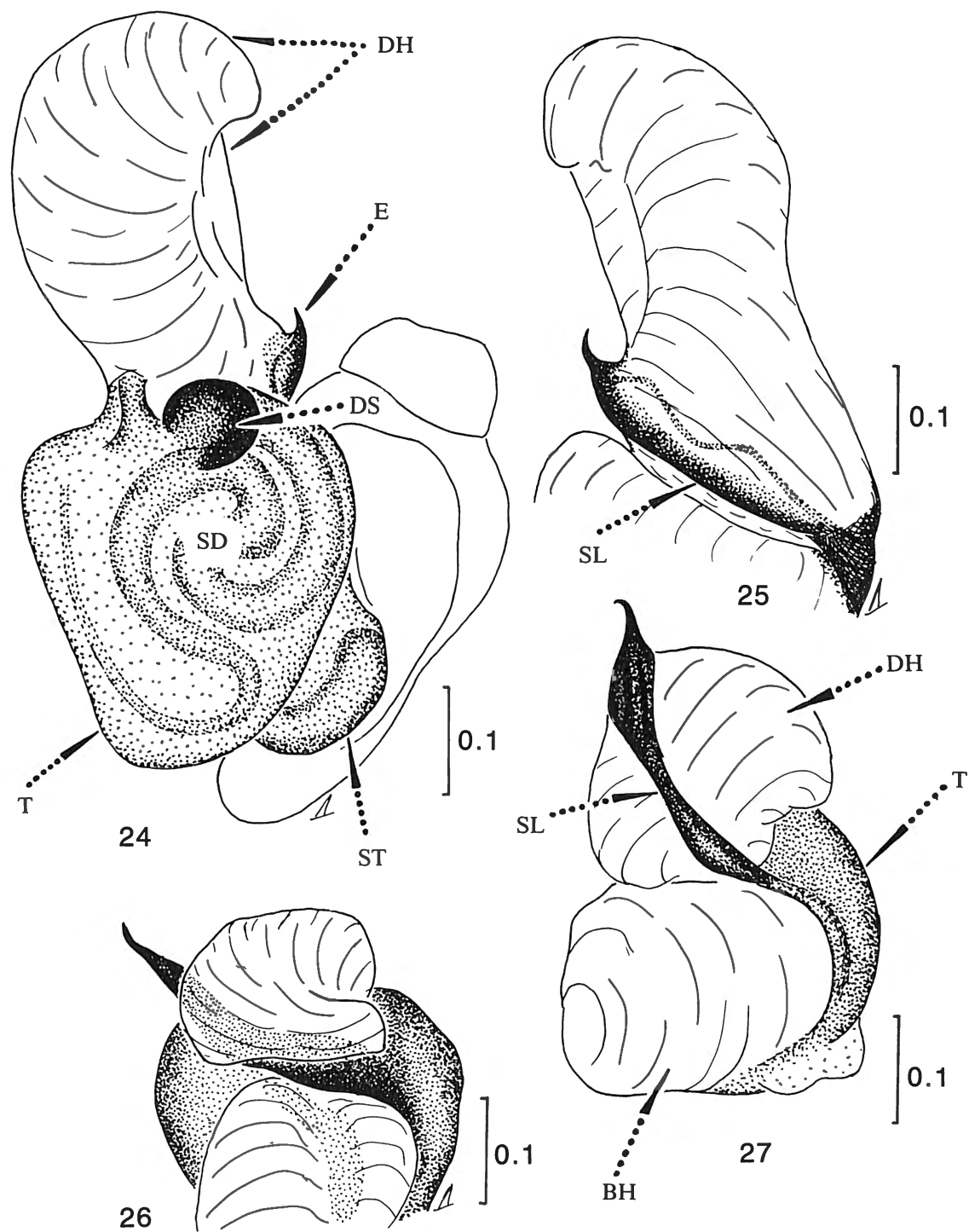
Distribution:

The genus *Talavera* (s. lat.) has an essentially a Holarctic, or more exactly a circumboreal boreo-montane distribution (sensu GORODKOV, 1984).

Remarks:

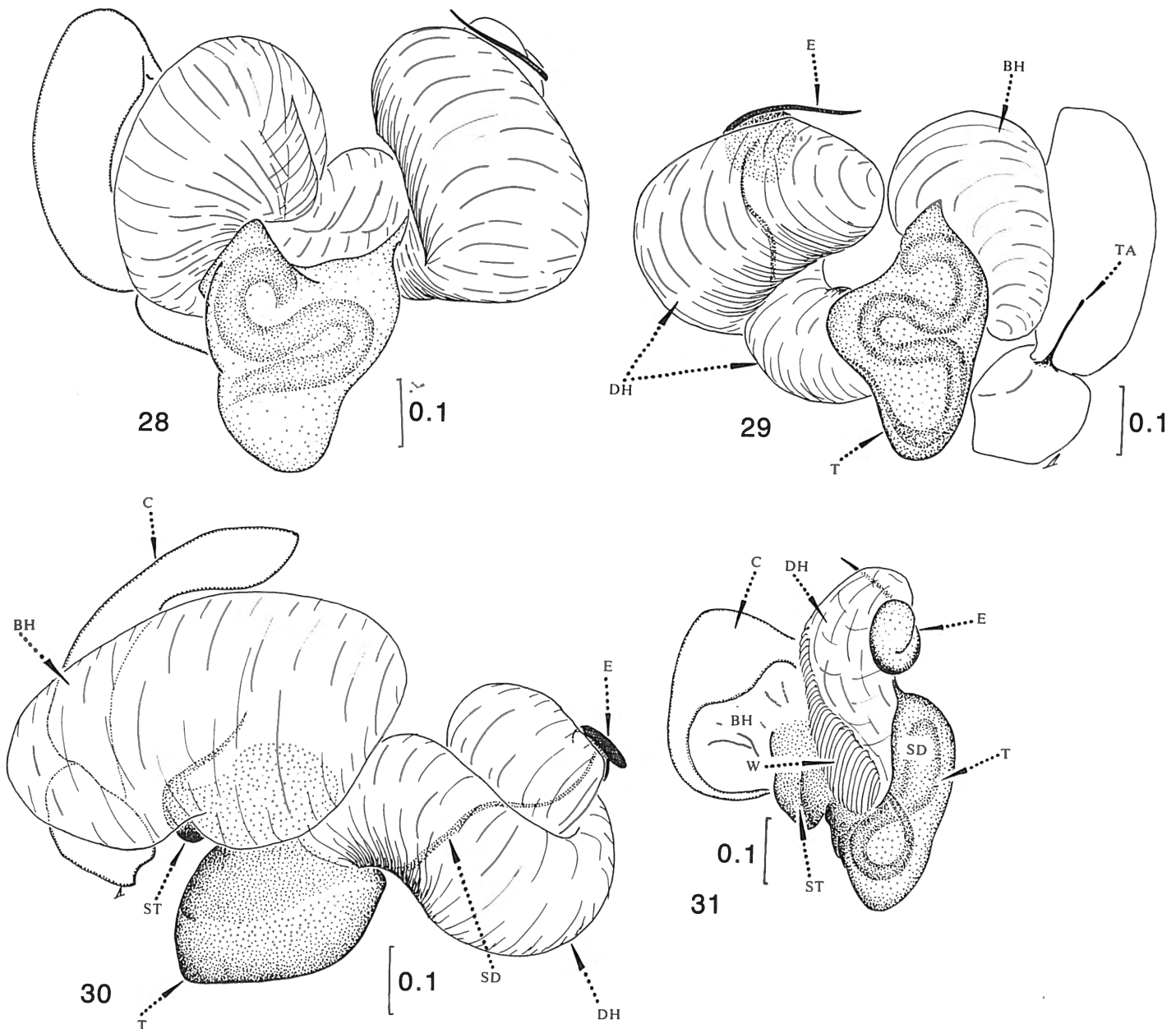
Based on genitalic characteristics (complex trajectory of sperm ducts, straight embolus and others) it appears to be necessary to transfer to *Talavera* two European species that had previously placed in *Euophrys*. These are *E. aperta* MILLER (from Czechoslovakia) [see PROSZYNSKI, 1976; fig. 120; MILLER, 1971: tab. XX, fig. 19] and *E. westringi* (SIMON) (from Central Europe) [see TULLGREN, 1944 (as *E. poecilopus*): S. 38, fig. 24A; Pl. III, figs. 52-55; MILLER, 1971: tab. XX, fig. 16]. Both these species are in need of redescription, therefore I am not proposing new combinations for them here. Thus the revised list of the species in the genus *Talavera* includes:

- *T. aequipes* (O.P. CAMBRIDGE, 1871) comb. nov.
- *T. monticola* (KULCZYŃSKI, 1884) comb. nov.
- *T. thorelli* (KULCZYŃSKI, 1891) comb. nov.
- *T. minuta* (BANKS, 1895).
- *T. trivittata* (SCHENKEL, 1963) comb. nov.
- *T. esyunini* sp. nov.



Figs. 24-27 – Expanded left palps of *Talavera*.

24, 25 - *Talavera esyunini*, ventral and retrolateral views; 26 - *Talavera minuta*, partially expanded palp, retrolateral-dorsal view; 27 - *Talavera thorelli*, partially expanded palp, retrolateral-dorsal view. Abbreviations: st - subtegulum, sl - solid ligament, bh - basal haematodocha. Remaining abbreviations as in figs. 9-17.



Figs. 28-31 — Expanded palps of *Euophrys*.

28. *Euophrys flavoatra*, retrolateral view; 29. - *Euophrys prozysniskii*, retrolateral view; 30. - *Euophrys petrensis*, prolateral view; 31. *Euophrys frontalis*, prolateral-ventral view. Abbreviations: c - cymbium, ta - tibial apophysis, w - ridges of distal haematodocha. Remaining abbreviations as in figs. 9-27.

Since all these have recently been redescribed (*T. minuta*: MARUSIK, LOGUNOV, in press; PRÓSZYŃSKI, in press; *T. aequipes* and *T. thorelli*: LOGUNOV, CUTLER, MARUSIK, in press; *T. monticola*: THALER, 1981; *T. trivittata*: SCHENKEL, 1963; PAIK, 1986) only a description of the new species, *T. esyunini*, is provided below.

***Talavera esyunini* sp. n.**
(figs. 2, 8, 12-17, 24, 25)

Material examined:

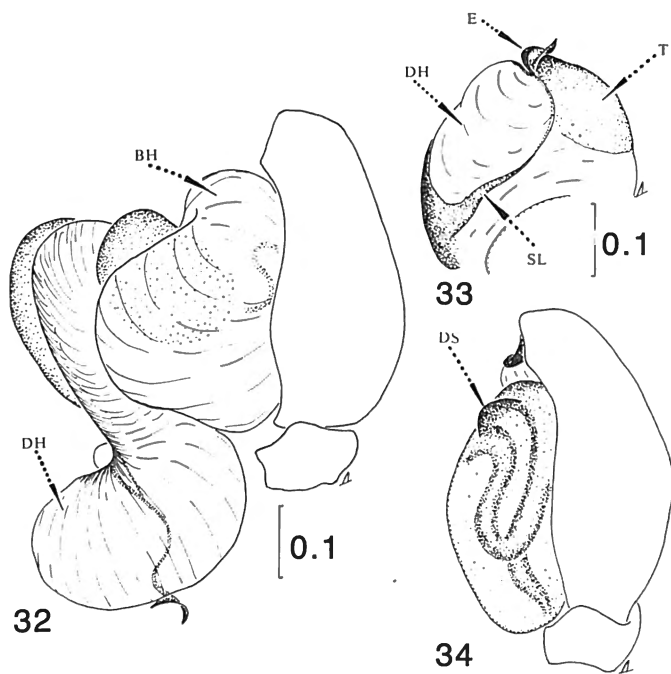
Holotype: 1m ?(ZMMU, Ta-4662), Perm Area, Gor-

nozavodsk Distr., "Basegi" St. Reserve, mountainous shrub tundra, 01.07.1984 (S.L. ESYUNIN).

Paratypes: 2m (Bi-1086), 2m (ZMMU, Ta-4663), together with holotype; 1f, 2m (Bi-1087-1088), 4m (RINS), 6m (PSU), same locality, Severnyi Baseg Mt., mountainous shrub tundra, 10.07.1990 (S.L. ESYUNIN).

Diagnosis:

Talavera esyunini is close related to *T. minuta*, but males may be distinguished by a stronger distal haematodocha and a slightly surved apex of the embolus (compare figs. 10 and 13). Females are not distinguishable.



Figs. 32-34 – Left palp of *Talavera aequipes*.
 32 - expanded palp, retrolateral view;
 33 - unexpanded bulb, retrolateral-dorsal view;
 34 - unexpanded palp, retrolateral view.
 Abbreviations as in figs. 9-31.

1-1, v. 1-2 ap; metatarsus pr. and rt. 1-2 ap, v. 2-2 ap. Leg IV: femur d. 1-1-1, tibia pr. 0-1, rt. 1-1, v. 1-1 ap; metatarsus pr. 0-2, rt. 1-1-2, v. 1-1 ap. Female. Leg I: femur d. 1-1-2; tibia v. 1-2-2; metatarsus v. 2-2. Leg. II: femur d. 1-1-2; tibia v. 1-1; metatarsus v. 2-2. Leg. III: femur d. 0-0-1-1-1; tibia pr. and rt. 1-1, v. 0-1-0; metatarsus pr., rt. and v. 1-2 ap. Leg IV: tibia rt. 0-1, v. 0-1-0; metatarsus pr. 2 ap, rt. 0-1-1-2 ap, v. 1-2 ap. Coloration. Coloration of both males and females as described for the genus except as follows: eyes of row I surrounded by white flat hairs; clypeus yellowish, covered with white hairs. Palps of both males and females yellow with brownish femur. Palp is shown in figs. 12-14. Epyginum and vulva in figs. 15-17.

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Distribution:

Only type locality.

Etymology:

The species is named after the russian arachnologist, my colleague, Sergei L. Esyunin, who is active studying spiders of the Ural Mountains, and who collected this new species.

Description:

Measurements (males/female). Carapace: length 1.19-1.26/1.21, width 0.87-0.90/0.93, height 0.54/0.58. Abdomen: length 1.23-1.43/1.77, width 0.96-1.07/1.33. Cheliceral length 0.39-0.43/0.31. Clypeus height 0.07-0.10/0.07. AME 0.20-0.23/0.23. Eye field: length 0.51-0.53/0.61, W-1 0.71-0.77/0.80, W-3 0.73-0.77/0.86. Length of segments of legs: leg I: 0.57-0.64/0.59 + 0.31-0.36/0.34 + 0.36-0.42/0.37 + 0.29-0.39/0.30 + 0.23-0.24/0.29; leg II: 0.52-0.60/0.56 + 0.26-0.31/0.34 + 0.30-0.31/0.33 + 0.27-0.30/0.30 + 0.19-0.23/0.26; leg III: 0.71-0.73/0.77 + 0.34-0.36/0.36 + 0.38-0.41/0.39 + 0.36-0.40/0.40 + 0.26-0.36/0.29; leg IV: 0.69-0.71/0.77 + 0.30-0.31/0.36 + 0.47/0.53 + 0.41-0.46/0.46 + 0.34/0.31. Leg spination. Male. Leg I: femur d. 0-1-1-1; tibia v. 1-1-1; metatarsus v. 2-2. Leg II: femur d. 0-1-1-2; tibia pr. 0-1, v. 1-1; metatarsus v. 2-2. leg III: femur pr. 0-1, d. 0-1-1-1; tibia pr. and rt.

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