# Redefinition of the genus *Habrocestoides* Prószyński, 1992, with establishment of a new genus, *Chinattus* gen. n. (Araneae: Salticidae)

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## Summary

The genus *Habrocestoides* is redefined, paying particular attention to the detailed structure of the genitalia. Six species, *H. bengalensis* Prószyński, 1992, *H. indicus* Prószyński, 1992, *H. darjeelingus* sp. n., *H. micans* sp. n., *H. nitidus* sp. n. and *H. phulchokiensis* sp. n., are here included in *Habrocestoides*. Two species of *Habrocestoides* are transferred to *Hasarius*: *H. dactyloides* (Xie, Peng & Kim, 1993), comb. n. and *H. kweilinensis* (Prószyński, 1992), comb. n. Eight Chinese species of *Habrocestoides* are transferred to the new genus *Chinattus*: *C. emeiensis* (Peng & Xie, 1995), comb. n., *C. furcatus* (Xie, Peng & Kim, 1993), comb. n., *C. sinensis* (Prószyński, 1992), comb. n., *C. szechwanensis* (Prószyński, 1992), comb. n., *C. tibialis* (Żabka, 1985), comb. n., *C. validus* (Xie, Peng & Kim, 1993), comb. n., *C. wulingensis* (Peng & Xie, 1995), comb. n. and *C. wulingoides* (Peng & Xie, 1995), comb. n. *Heliophanus undulatus* Song & Chai, 1992 is also transferred to *Chinattus*, and *Heliophanus geminus* Song & Chai, 1992 is synonymised with *Chinattus tibialis* (Żabka, 1985). A new species, *Chinattus caucasicus* sp. n., is described from Iran and the Caucasus. *Habrocestum orientale* Żabka, 1985 is transferred to *Hasarius*.

## Introduction

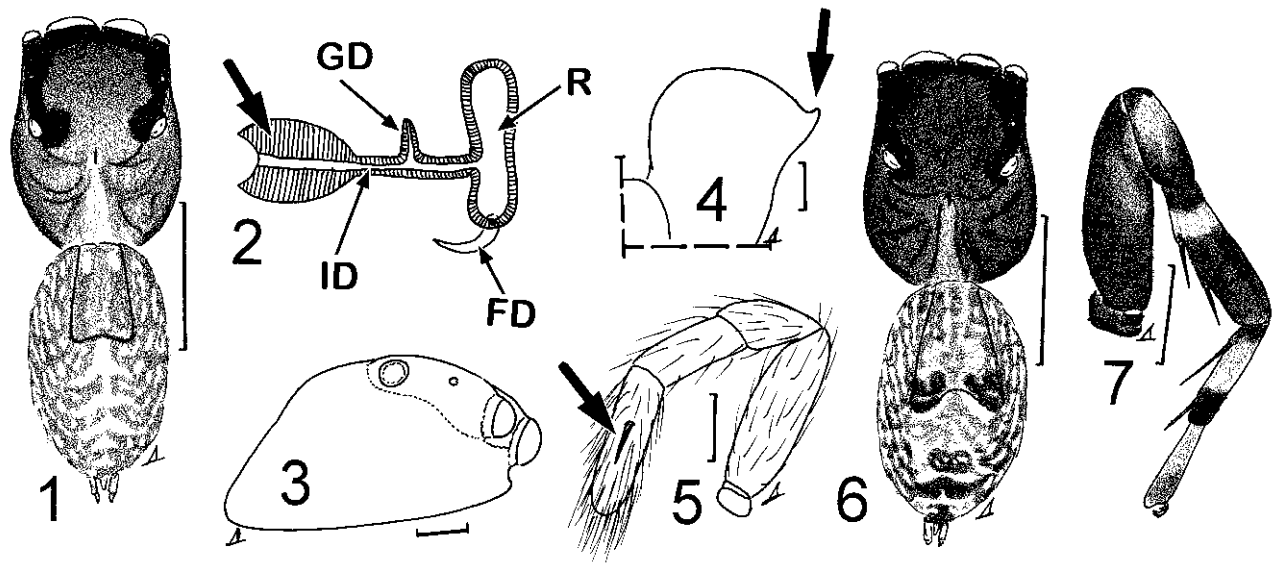
The genus *Habrocestoides* was established by Prószyński (1992b) and then revised for the Chinese fauna by Peng & Xie (1995). However, in both cases the detailed structure of the male genitalia of the type species was not taken into consideration, and because of this most of the species described so far in the genus *Habrocestoides* (see e.g. Prószyński, 1990, 1992a; Xie *et al*., 1993; Peng & Xie, 1995) belong elsewhere.

The aims of this paper are: (1) to redefine the genus *Habrocestoides* using both somatic and genitalic characters; (2) to check the generic status of all the species so far included in *Habrocestoides*, including the establishment of the new genus *Chinattus*; (3) to describe new *Habrocestoides* and *Chinattus* species found during the current study.

## Material and methods

This work is based on material newly collected in S and SE Asia and the Caucasus. Specimens for this study were borrowed from or distributed among the following museums: ISE=Zoological Museum of the Institute for Systematics and Ecology of Animals, Novosibirsk, Russia; STO=Swedish Museum of Natural History, Stockholm, Sweden; SMFM=Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany; UT=Zoological Museum, University of Turku, Turku, Finland; ZISP=Zoological Institute, Russian Academy of Science, St. Petersburg, Russia; ZMMU=Zoological Museum of the Moscow State University, Moscow, Russia.

Most of the terms adopted for genitalic descriptions are those used by Comstock (1910), Sierwald (1990), Coddington (1990) and Logunov *et al*. (1998). Details of terminology are illustrated in Figs. 2, 8–11. Abbreviations used in the text and figures: ap=apical, BH=basal haematodocha, C=cymbium, CP=copulatory pore, CTA=compound terminal apophysis, d=dorsal, DH=distal haematodocha, E=embolus, FD=fertilisation duct, Fm=femur, GD=glandular duct, ID=insemination duct, Mt=metatarsus, pr=prolateral, Pt=patella, R=receptacle, rt=retrolateral, Rx=salticid radix, SD=seminal duct, St=subtegulum, T=tegulum, Tb=tibia, v=ventral. Names of some collectors are



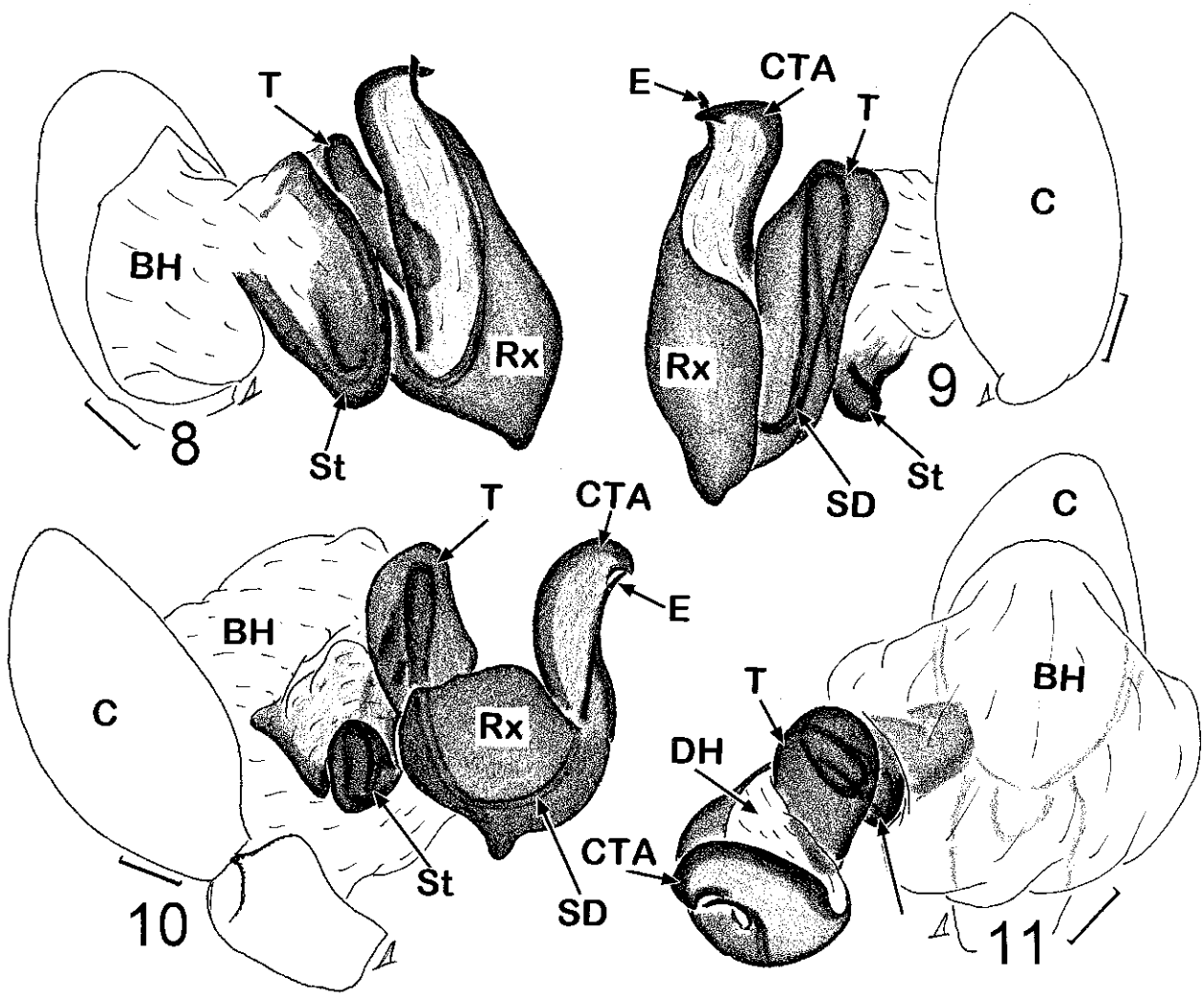

Figs. 1–7: Somatic and genital characters in *Habrocestoides* spp. **1** Male body of *Habrocestoides nitidus* sp. n.; **2** Schematic course of spermathecal channels in *Habrocestoides* spp.; **3–5** *Habrocestoides nitidus* sp. n.; **3** Male carapace, lateral view; **4** Male maxilla; **5** Female palp. **6–7** *Habrocestoides darjeelingus* sp. n.; **6** Male body; **7** Male leg I, lateral view. Scale lines=1 mm (1, 6), 0.25 mm (3, 7), 0.2 mm (5), 0.1 mm (4).

abbreviated as follows: DL=Dr D. V. Logunov, PL=Dr P. T. Lehtinen, PD=Dr P. M. Dunin, SG=Dr S. I. Golovatch. 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.

## Genus *Habrocestoides* Prószyński, 1992

*Type species*: *Habrocestoides bengalensis* Prószyński, 1992, by original designation by Prószyński (1992b).

*Definition*: Small unidentate spiders ranging from about 3.2 to 4.6 mm in length. Sexes similar in general body form; sexual dimorphism shown by males having the following characters (all absent in females): hook-shaped outgrowth on maxillae (arrowed in Fig. 4), dorsal abdominal scutum (Figs. 1, 6), patellae III rt with 1 spine (0-1-0), femora I (Fig. 7) completely brown/dark brown (yellow in females), and leg formula (legs I longest in males, IV longest in females). Carapace, including clypeus, in both sexes almost devoid of covering scales, so carapace usually lustrous-shiny with noticeable green metallic sheen on eye field. *Carapace*: rather high; highest at about PLE level (Fig. 3); fovea present; both sexes with a light (yellow) longitudinal stripe behind fovea (Figs. 1, 6). *Eyes*: anterior row wider than others in both sexes; second row midway between ALE and PLE; quadrangle length 45–53% of carapace length. *Clypeus*: rather low, about 30–40% of AME diameter; vertical or slightly forward-sloping (Fig. 3). *Chelicerae*: small, subvertical; promargin with two small teeth; retromargin with a single medium tooth of unidentate type (Fig. 12). *Maxillae*: slightly convergent; normal shape, but male maxillae often have a lateral hook-shaped outgrowth (arrowed in Fig. 4). *Labium*: subtriangular. *Sternum*: oval, elongate, with straight anterior margin. *Pedicel*: short, not visible in dorsal view. *Abdomen*: elongate, dorsal scutum always present in males (its posterior margin usually curved as in Figs. 1, 6); colour markings simple and usually reticulate (Figs. 1, 6). *Spinnerets*: subequal in length and thickness. *Legs*: subequally developed; usually with numerous brown rings in both sexes, but femora I in males always completely brown/dark brown as in Fig. 7. *Leg formula*: I,IV,III,II in males; IV,III,I,II in females. *Leg spination*: femora I-III d 1-2 ap; patellae IV rt 0-1-0 (patella III in males with same pattern); tibiae II pr 0-1 or 1-1; tibiae of all other legs pr and rt 1-1; metatarsi of all legs v 2-2 ap. *Female palp*: normal shape; without apical claws, but tarsi always with 1 retrolateral spine (arrowed in Fig. 5).



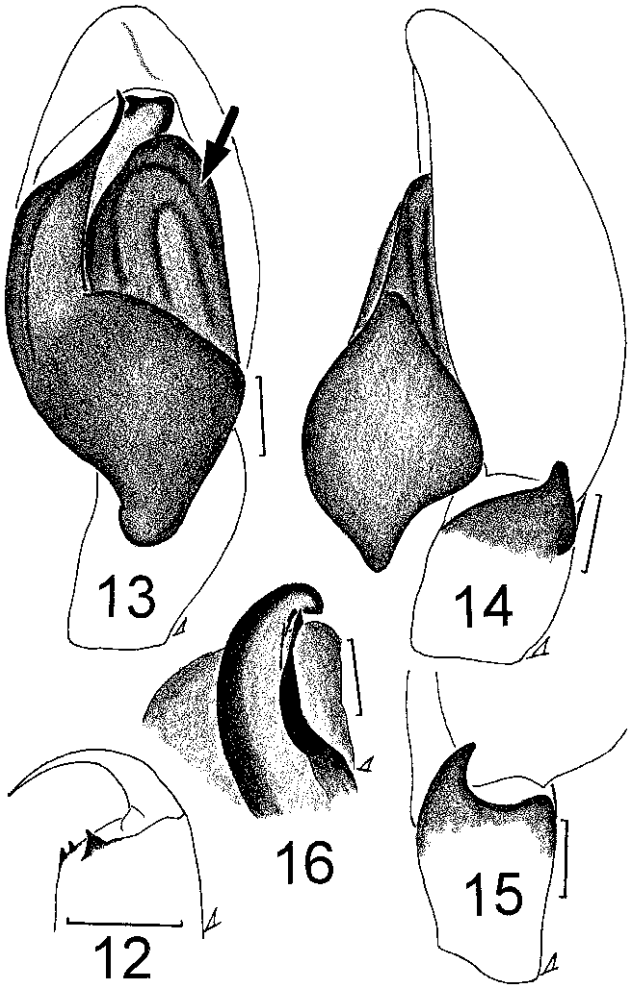

Figs. 8–11: Expanded male palps. **8, 9** *Habrocestoides darjeelingus* sp. n., lateral and median views; **10, 11** *Habrocestoides bengalensis* Prószyński, lateral and dorsal views. Scale lines=0.1 mm.

*Male palp*: cymbium of normal form; a poorly developed cymbial pocket (*sensu* Logunov, 1996) present; one (Figs. 14, 25) or two (Fig. 33) retrolateral tibial apophyses present; sometimes mesal tibial apophysis also present (arrowed in Fig. 38); embolic division consists of embolus and compound terminal apophysis (CTA) (Figs. 9, 10, 31, 34), which are sometimes completely fused (Figs. 35, 37); CTA usually hidden in cymbial pocket, visible in apical view when cymbium is cut (Figs. 16, 27, 31); both basal and distal haematodochae developed (Figs. 8–11); sperm duct rather simple; functional tegulum consists of two sclerites, a small basal one probably corresponding to the true tegulum and a larger distal one here called the salticid radix (Figs. 8–11: Rx) (for more details see below). *Female genitalia*: rather simple; copulatory openings hidden beneath atrial lips; lips border a pair of shallow depressions and are directed more or less medially (Figs. 17, 19, 22); posterior epigynal margin forms a triangular plate usually overhanging the epigastric furrow (Fig. 17); epigynal plate has a characteristic round internal structure visible through the integument (arrowed in Figs. 17, 19); spermathecae characterised by short insemination ducts widened and heavily chitinised at entrances (arrowed in Figs. 2, 20), elongated receptacles and rather long glandular ducts (Figs. 2, 18, 20, 23).

*Morphological notes*: The functional tegulum (*sensu* Logunov & Cutler, in press) of the *Habrocestoides* male palp consists of two sclerites. The first is a small sclerite situated proximal to the embolic division and as if between the functional tegulum and the subtegulum (Figs. 9, 10: T). It is commonly accepted that the subtegulum is an obviously simple and single sclerite consisting in the most complicated cases of a sclerotised ridge and annuli (Comstock, 1910; Sierwald, 1990; etc.). Therefore, the observed sclerite cannot be a part of the subtegulum. Its position suggests that it is the true tegulum (in the restricted sense, Logunov & Cutler, in press), and this is supported by the fact that the sperm duct reservoir passes through this sclerite along its wall (Figs. 9–11: T). The large sclerite forming the main body of the functional tegulum in *Habrocestoides* could hence correspond to that which I termed the salticid radix in the genera *Paramarpissa* and *Pseudeuophrys* (=the linyphiid radix, *sensu* Merrett, 1963 and Saaristo, 1977; =the araneid stipes, *sensu* Comstock, 1910, Grasshoff, 1968 and Coddington, 1990) (Figs. 9–11: Rx); for more details and evidence for this terminology see Logunov & Cutler (in press) and Logunov (1998). Although in the case of *Habrocestoides* the tegulum is separate from the salticid radix, many salticid genera, e.g. *Phintella*, *Chrysilla*, *Chinattus*, *Hasarius* etc., exhibit it only as a prolateral outgrowth of the salticid radix (e.g. arrowed in Figs. 13, 40).

The characteristic round internal structure of the epigyne (arrowed in Figs. 17, 19), has so far been found among the salticids only in *Habrocestoides* and *Chinattus* and can be assumed to be a modified epigynal pocket.

The usage of the term "compound terminal apophysis" (Figs. 9–11: CTA) is the same as that adopted by Logunov *et al.* (1998) to emphasise the composite nature of the terminal apophysis in some salticids, including *Habrocestoides*. The structure of the CTA is similar to that of *Aelurillus* (cf. Figs. 27, 31 and Weiss, 1979: figs. 13, 15).




Figs. 12–16: *Habrocestoides bengalensis* Prószyński, male. **12** Left chelicera, ventral view; **13** Palp, ventral view; **14** Palp, lateral view; **15** Tibial apophysis, dorsal view; **16** Embolic division, apical view. Scale lines=0.25 mm (12), 0.1 mm (13–16).

*Diagnosis and affinities*: Some former workers (Xie *et al.*, 1993; Peng & Xie, 1995) placed *Habrocestoides* near *Habrocestum*, based on Chinese species only. However, these Chinese species have little in common with the type species of *Habrocestoides* and belong to the new genus *Chinattus* (see below).

*Habrocestoides* can be easily separated from *Chinattus* by the following characters: second eye row midway between ALE and PLE (slightly closer to PLE in *Chinattus*), eye field sloping forwards (flat and horizontal in *Chinattus*), male dorsum with scutum (Figs. 1, 6) (absent in *Chinattus*), female palpal tarsi with retrolateral spine (absent in *Chinattus*), patellae III and IV with spines (all patellae lack spines in *Chinattus*), male maxillae with lateral outgrowth (Fig. 4) (absent in *Chinattus*), compound terminal apophysis as a separate sclerite (Figs. 31, 34), sometimes fused with embolus (Figs. 35, 37) (absent in *Chinattus*), cymbial pocket present (absent in *Chinattus*), epigynal lips well

developed (not marked in *Chinattus*) (cf. Figs. 17, 19, 22 and 45), copulatory openings facing medially (laterally in *Chinattus*) and receptacles clearly distinguishable from insemination ducts (poorly distinguishable in *Chinattus*) (cf. Figs. 18, 20, 23 and 46, 47).

Regarding the relationships of the true *Habrocestoides*, the occurrence of the more or less developed cymbial pocket and the structure of the CTA (Figs. 16, 27, 31) could indicate a relationship with the Aelurillinae (especially with *Aelurillus*), but the ground plan of the spermathecae is quite similar to that of the so-called *Icius-Pseudicius* complex and hence both similarities may be cases of parallelism. Therefore, the position of *Habrocestoides* is at present unclear.

*Distribution*: India (W. Bengal) and Nepal.

## Review of species

### *Habrocestoides bengalensis* (Prószyński, 1992 (Figs. 10, 11, 12–16, 19–21)

*Habrocestoides bengalensis* Prószyński, 1992b: 174–176, figs. 38–42 (♂♀).

*Diagnosis*: The species is most similar to *Habrocestoides micans*, but males can be readily separated by the shape of the CTA (cf. Figs. 16 and 31), the tegulum (cf. Figs. 13 and 28) and the tibial apophysis (cf. Figs. 15 and 30), and females by details of the epigyne and spermathecae (Figs. 19–23).

*Distribution*: India (W. Bengal).

*Description*: See Prószyński (1992b).

*Material examined*: INDIA: 1♂ (UT), W. Bengal, Darjeeling, Bhanjan road, *c*. 4 km W of Ghoom, 2300 m a.s.l., cloud forest, 1 May 1979 (PL); 1♀ (UT), W. Bengal, Darjeeling, *c*. 1.5 km NW of Sukhiapokri, 2350 m a.s.l., cloud forest with stones, 1 May 1979 (PL).

### *Habrocestoides darjeelingus* sp. n. (Figs. 6–9, 24–27)

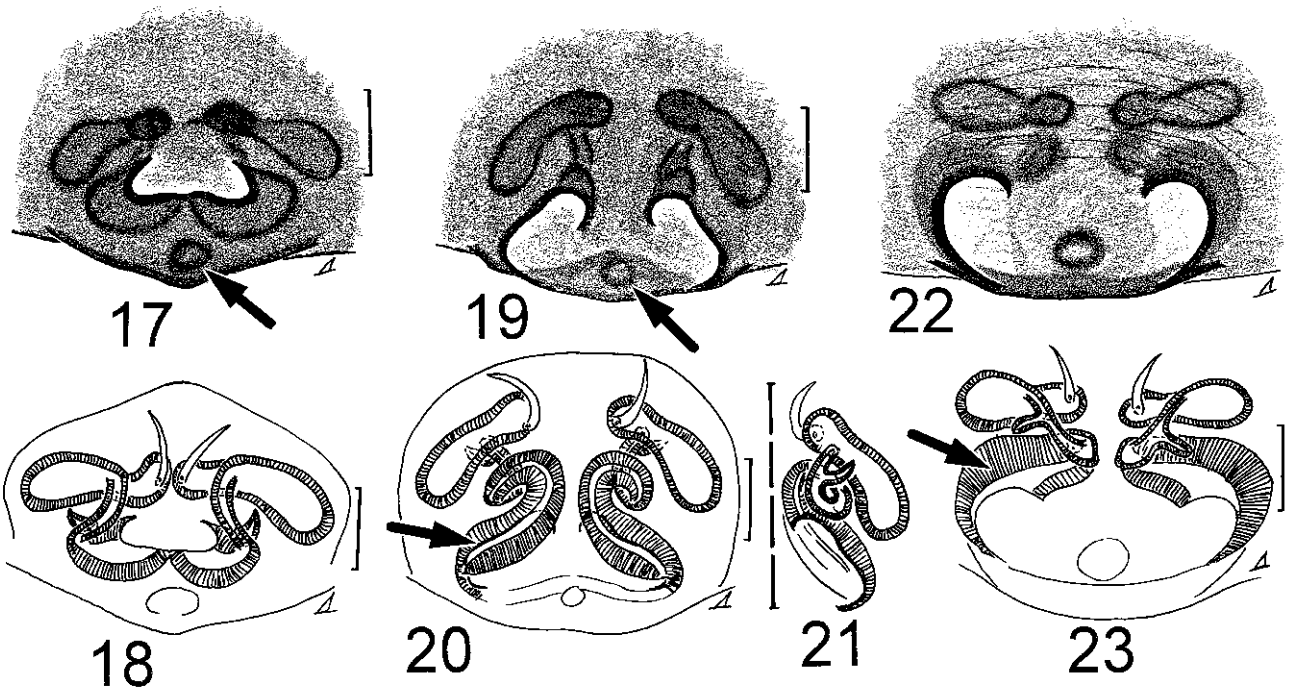
*Type*: Holotype ♂ (UT), India, W. Bengal, Darjeeling, Manibhanjan, 2100 m a.s.l., low bush, 1 May 1979 (PL).

*Etymology*: The species epithet refers to the type locality.

*Diagnosis*: *Habrocestoides darjeelingus* is close to *Habrocestoides indicus* in the thickness of the embolus, but the shape of the tegulum (cf. Fig. 24 and Prószyński, 1992b: fig. 45) and that of the tibial apophysis (cf. Fig. 25 and Prószyński, 1992b: fig. 46) is distinctive.

*Distribution*: India (W. Bengal).

*Description*: *Male* (paratype): Carapace 2.11 long, 1.45 wide, 1.20 high at PLE. Ocular area 1.13 long, 1.38 wide anteriorly and 1.30 wide posteriorly. Diameter of AME 0.45. Abdomen 2.13 long, 1.50 wide. Cheliceral length 0.90. Clypeal height 0.15. Length of leg segments: I 1.78+1.05+1.43+1.13+0.68; II 1.25+0.70+0.78+0.78+0.43; III 1.29+0.60+0.78+0.86+0.53; IV 1.50+0.65+1.03+1.25+0.60. Leg spination: I: Fm d 0-0-1-1ap; Tb v 2-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-1-ap; Tb pr 0-1, v 1-2ap; Mt v 2-2ap. III: Fm d 0-1-1-1ap; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 0-1-1-1-ap; Pt rt 0-1-0; Tb pr 1-1, rt 1-1-1, v 1-2ap; Mt pr and rt 1-1-2ap, v 2-2ap. Coloration: Carapace dark brown, lustrous-shiny with noticeable green metallic sheen on eye field, with longitudinal yellow stripe behind fovea (Fig. 6). Black around eyes. Clypeus brown, shiny, without scales. Sternum, maxillae, labium and chelicerae brown. Abdomen: dorsum




Figs. 17–23: **17, 18** *Habrocestoides nitidus* sp. n., female; **17** Epigyne, ventral view; **18** Spermathecae, dorsal view. **19–21** *Habrocestoides bengalensis* Prószyński, female; **19** Epigyne, ventral view; **20** Spermathecae, dorsal view; **21** Ditto, ventral view. **22, 23** *Habrocestoides micans* sp. n., female; **22** Epigyne, ventral view; **23** Spermathecae, dorsal view. Scale lines=0.1 mm.

and sides yellow-grey, with reticulate colour markings (Fig. 6); venter yellow. Book-lung covers and spinnerets yellow-brown. Legs yellow with numerous dark brown rings, except femora I completely dark brown (Fig. 7). Palpal structure as in Figs. 24–27.

*Female*: Unknown.

*Material examined*: Paratypes: INDIA: 2♂ (UT), W. Bengal, Darjeeling, *c*. 1.5 km NW of Sukhiapokri, 2350 m a.s.l., cloud forest with stones, 1 May 1979 (PL); 1♂ (ISE), W. Bengal, Darjeeling, Manibhanjan-Sandakphu road, 2700 m a.s.l., alpine vegetation, 1 May 1979 (PL).

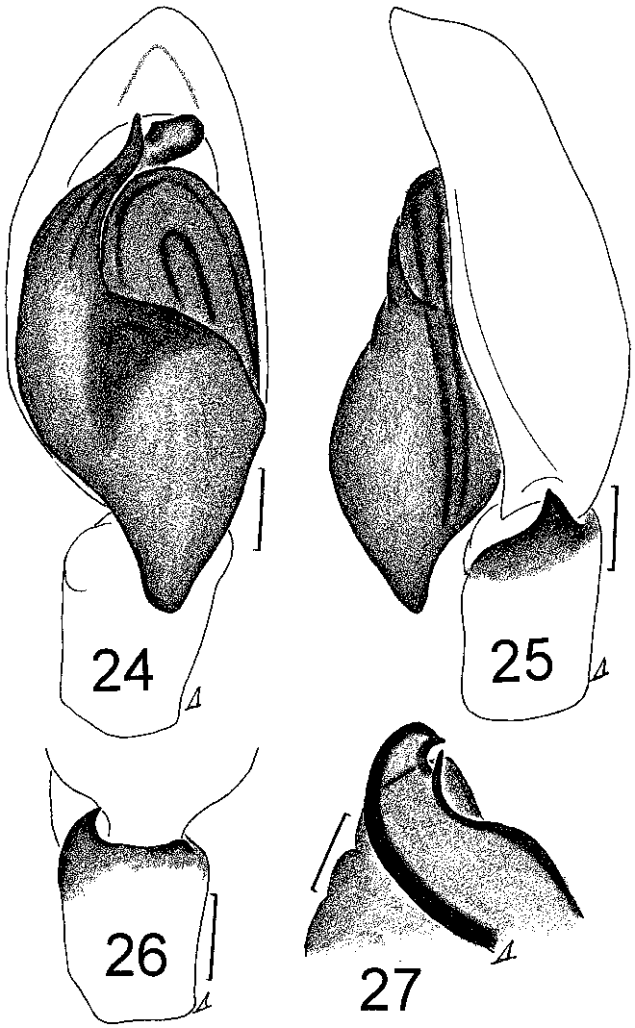
### *Habrocestoides indicus* Prószyński, 1992

*Habrocestoides indicus* Prószyński, 1992b: 176, figs. 44–47 (♂).

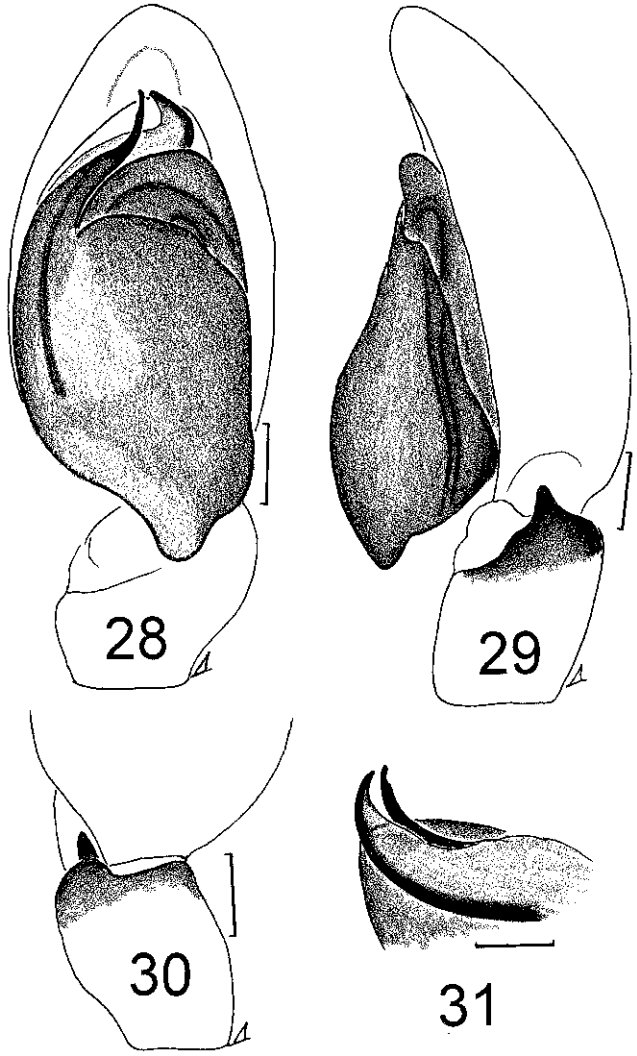
*Diagnosis*: This species is similar to *Habrocestoides darjeelingus*, but differs in the shape of the tegulum (cf. Fig. 24 and Prószyński, 1992b: fig. 45) and that of the tibial apophysis (cf. Fig. 25 and Prószyński, 1992b: fig. 46).

*Distribution*: India (W. Bengal).

*Description*: See Prószyński (1992b).




Figs. 24–27: *Habrocestoides darjeelingus* sp. n., male. **24** Palp, ventral view; **25** Palp, lateral view; **26** Tibial apophysis, dorsal view; **27** Embolic division, apical view. Scale lines = 0.1 mm.




Figs. 28–31: *Habrocestoides micans* sp. n., male. **28** Palp, ventral view; **29** Palp, lateral view; **30** Tibial apophysis, dorsal view; **31** Embolic division, apical view. Scale lines = 0.1 mm.

### *Habrocestoides micans* sp. n. (Figs. 22, 23, 28–31)

*Type*: Holotype ♂ (UT), India, W. Bengal, Darjeeling, Tigerhill, 2500 m a.s.l., hanging moss of cloud forest, 29 April 1979 (PL).

*Etymology*: The specific epithet is the Latin word "*micans*" meaning "metallic, shining".

*Diagnosis*: The species is most similar to *Habrocestoides bengalensis*, but males can be readily separated by the shape of the CTA (cf. Figs. 31 and 16), the tegulum (cf. Figs. 28 and 13) and the tibial apophysis (cf. Figs. 30 and 15), and females by details of the epigyne and spermathecae (Figs. 19–23).

*Distribution*: The type locality only.

*Description*: *Male* (paratype): Carapace 2.15 long, 1.40 wide, 1.15 high at PLE. Ocular area 0.98 long, 1.30 wide anteriorly and 1.20 wide posteriorly. Diameter of AME 0.45. Abdomen 2.00 long, 1.23 wide. Cheliceral length 0.83. Clypeal height 0.23. Length of leg segments: I 1.73+0.95+1.60+1.05+0.65; II 1.14+0.50+0.75+0.73+0.40; III 1.25+0.58+0.70+0.90+0.49; IV 1.35+0.58+0.95+1.15+0.58. Leg spination: I: Fm d 0-1-1-1ap; Tb v 2-0-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-1ap; Tb pr 1-1, v 2-2ap; Mt v 2-2ap. III: Fm d 0-1-1-1ap; Pt rt

0-1-0; Tb pr and rt 1-1, v 1-2ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 0-1-1-0; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-1ap or 2-1ap; Mt pr and rt 1-1-2ap, v 2-2ap. Coloration: Carapace dark brown, lustrous-shiny with noticeable green metallic sheen on eye field, with longitudinal yellow stripe behind fovea. Black around eyes. Clypeus brown, shiny, without scales. Sternum yellow, with brown margins. Maxillae and labium yellowish brown. Chelicerae dark brown. Abdomen: dorsum and sides yellow with reticulate colour markings; venter yellow. Book-lung covers and spinnerets yellow, tinged with brown. Legs yellow, with numerous brown rings, except femora I completely brown. Palpal structure as in Figs. 28–31.

*Female*: Carapace 1.68 long, 1.15 wide, 0.88 high at PLE. Ocular area 0.88 long, 1.10 wide anteriorly and 1.05 wide posteriorly. Diameter of AME 0.35. Abdomen 2.07 long, 1.45 wide. Cheliceral length 0.58. Clypeal height 0.10. Length of leg segments: I 0.90+0.54+0.59+0.50+0.40; II 0.83+0.43+0.50+0.50+0.33; III 0.93+0.45+0.53+0.68+0.43; IV 1.10+0.53+0.75+0.90+0.48. Leg spination: I: Fm d 0-1-1-0-1ap; Tb 2-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-0-1ap; Tb pr 0-1, v 2-2ap; Mt v 2-2ap. III: Fm d 0-1-1-1ap; Tb pr and rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 0-1-1-0; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. Coloration as male, but lighter (yellow predominates), carapace with yellow marginal bands, and legs with less contrasting brown rings. Epigyne and spermathecae as in Figs, 22, 23.

*Material examined*: Paratypes: 1♀ (UT), 1♂ (ISE), together with holotype.

### *Habrocestoides nitidus* sp. n. (Figs. 1, 3–5, 17, 18, 32–34)

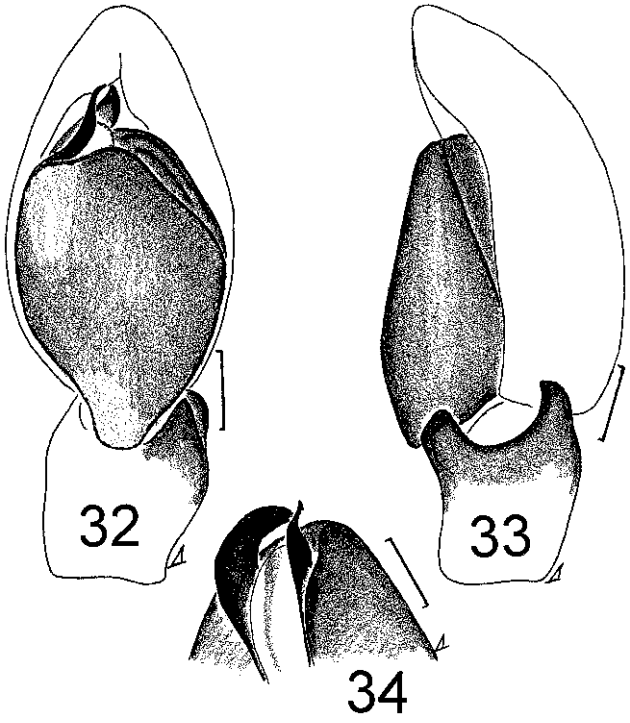
*Type*: Holotype ♂ (UT), India, W. Bengal, Darjeeling, Sunguri, Chittree road, coniferous forest with moss, 1 May 1979 (PL).

*Etymology*: The specific epithet is the Latin word "*nitidus*" meaning "shining".

*Diagnosis*: This species differs from other *Habrocestoides* species in having two tibial apophyses (Fig. 33) and a heavily chitinised CTA (Fig. 34), which usually appears membranous in other species (Figs. 16, 31), as well as in the position of the posterior margin of the atrium, which is separated by some distance from the posterior margin of the epigynal plate (Fig. 17).

*Distribution*: The type locality only.

*Description*: *Male* (paratype): Carapace 1.63 long, 1.20 wide, 0.90 high at PLE. Ocular area 0.88 long, 1.10 wide anteriorly and 1.03 wide posteriorly. Diameter of AME 0.36. Abdomen 1.58 long, 1.08 wide. Cheliceral length 0.59. Clypeal height 0.14. Length of leg segments: I 1.13+0.65+0.80+0.65+0.48; II 0.90+0.50+0.54+0.54+0.38; III 0.98+0.45+0.60+0.70+0.43; IV 1.03+0.45+0.78+0.91+0.48. Leg spination: I: Fm d 0-1-1-0-1ap; Tb v 2-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-0-1ap; Tb pr 0-1, v 2-2ap; Mt v 2-2ap. III: Fm d 1-1-2ap; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-2ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 1-1-2ap; Pt pr and rt 0-1-0; Tb pr 1-1, rt 1-1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. Coloration: Carapace yellowish brown (lustrous-shiny), with yellow longitudinal stripe behind fovea. Black around eyes. Sternum, maxillae and labium yellow. Abdomen: dorsum brownish yellow, with reticulate dorsal colour markings (Fig. 1); venter yellow. Book-lung covers yellow. Spinnerets yellow, tinged with brown. Legs yellow with numerous brown rings, except femora I completely brown. Palpal structure as in Figs. 32–34.




Figs. 32–34: *Habrocestoides nitidus* sp. n., male. **32** Palp, ventral view; **33** Palp, lateral view; **34** Embolic division, apical view. Scale lines = 0.1 mm.

*Female*: Carapace 1.90 long, 1.0 wide, 1.00 high at PLE. Ocular area 0.93 long, 1.21 wide anteriorly and 1.13 wide posteriorly. Diameter of AME 0.40. Abdomen 2.08 long, 1.35 wide. Cheliceral length 0.68. Clypeal height 0.13. Length of leg segments: I 1.05+0.59+0.73+0.56+0.40; II 0.98+0.50+0.55+0.50+0.41; III 1.08+0.53+0.63+0.73+0.46; IV 1.26+0.50+0.85+1.03+0.60. Leg spination: I: Fm d 0-1-1-0-1ap; Tb v 2-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-0-1ap; Tb pr 0-1, v 0-2-2ap; Mt v 2-2ap. III: Fm d 0-1-1-1ap; Tb pr and rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 0-1-1-0; Pt rt 0-1-0; Tb pr and rt 1-1, v 2-2ap; Mt pr and rt 1-2ap, v 2-2ap. Coloration as male, but contrasting rings on legs paler. Epigyne and spermathecae as in Figs. 17, 18.

*Material examined*: Paratypes: 1♀ (UT), 1♂ (ISE), together with holotype; 2♂ (UT), India, W. Bengal, Darjeeling, Tigerhill, 2100 m a.s.l., 29 April 1979 (PL).

### *Habrocestoides phulchokiensis* sp. n. (Figs. 35–39)

*Type*: Holotype ♂ (UT), Nepal, Bagmati, Phulchoki, 2050 m a.s.l., moist stony brook valley, 12 May 1979 (PL).

*Etymology*: The specific epithet refers to the type locality.

*Diagnosis*: This species is easily separated from all other *Habrocestoides* species by the peculiar structure of the embolic division (Figs. 35, 37), in which the CTA and embolus are fused together and strongly chitinised, and by the structure of the retrolateral tibial apophysis (Fig. 36), as well as by the presence of a mesal tibial apophysis (arrowed in Fig. 38) and a proximal process on the palpal tibiae (Fig. 39).

*Distribution*: The type locality only.

*Description*: *Male*: Carapace 2.43 long, 1.73 wide, 1.25 high at PLE. Ocular area 1.20 long, 1.58 wide anteriorly and 1.45 wide posteriorly. Diameter of AME 0.55. Abdomen 2.18 long, 1.58 wide. Cheliceral length 0.88. Clypeal height 0.13. Length of leg segments: I 1.93+1.20+1.58+1.23+0.68; II 1.30+0.78+0.80+0.75+0.45; III 1.58+0.70+0.90+0.95+0.48; IV 1.50+0.65+0.93+1.10+0.49. Leg spination: I: Fm d 0-1-1-2ap; Tb v 2-2-2ap; Mt v 2-2ap. II: Fm d 0-1-1-2ap; Tb v 1-2-2ap; Mt v 2-2ap. III: Fm d 0-1-1-2ap; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 1-1-1ap; Pt rt 0-1- 0; Tb pr and rt 1-1, v 1-1ap; Mt pr and v 1-2ap, rt 1-1-2ap. Coloration: Carapace dark brown, shiny, with yellow longitudinal stripe behind fovea. Eye field sparsely covered with transparent scales. Black around eyes. Clypeus brown, shiny, without scales. Sternum yellow; maxillae and labium brownish yellow. Chelicerae dark brown. Abdomen: dorsum and sides with yellow-brown reticulate colour markings, dorsum additionally with longitudinal yellow indented band; venter yellow. Book-lung covers yellow. Spinnerets: posterior pair yellow, others brown. All legs yellow with numerous wide brown rings, except femora I completely brown. Palpal structure as in Figs. 35–39.

*Female*: Unknown.

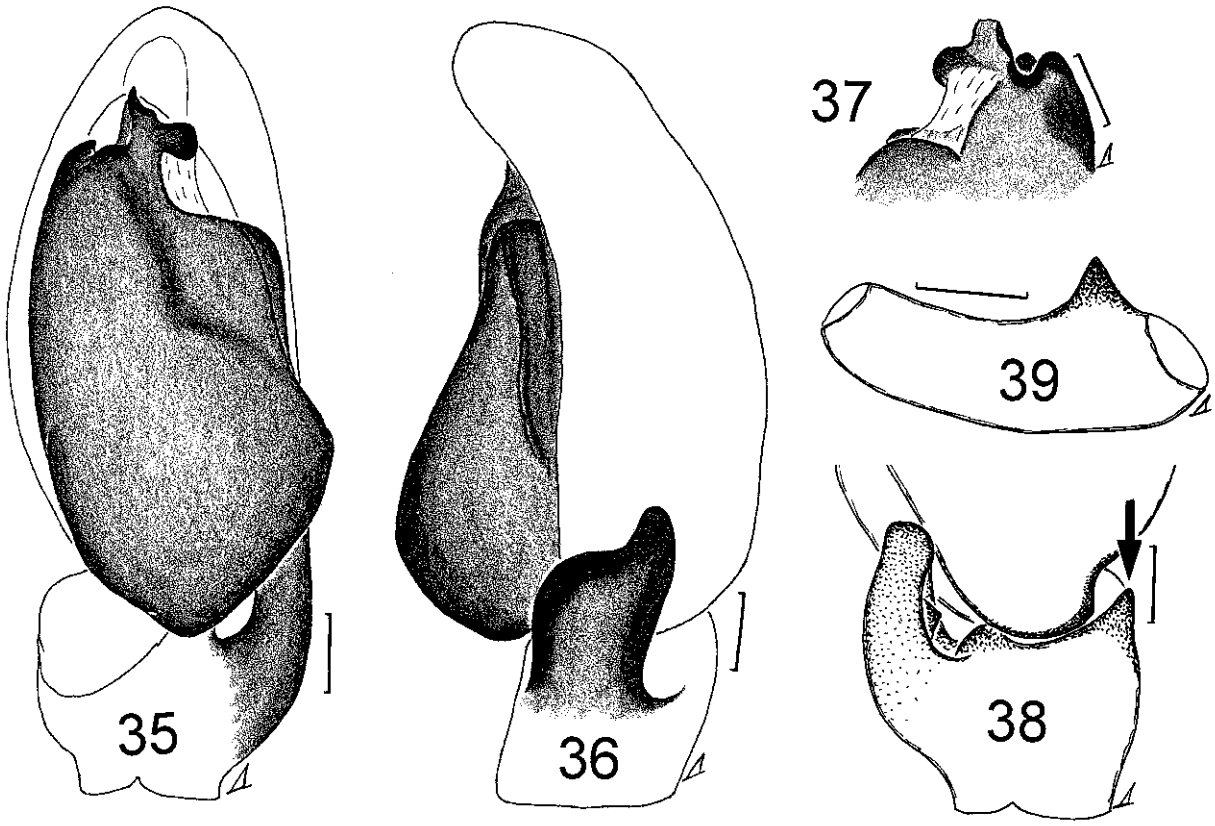
*Material examined*: Only the holotype.

## Genus *Chinattus* gen. n.

*Type species*: *Habrocestoides szechwanensis* Prószyński, 1992.

*Etymology*: The generic name is derived from "China", the country where most known species occur, and "*attus*" meaning "jumper"; gender masculine.

*Definition*: Small spiders ranging from about 2.9 to 5.0 mm in length. Sexual dimorphism poorly marked, but males usually more colourful than females and their legs I longer and more brightly ornamented than in females (e.g. Fig. 43). *Carapace*: moderately high; eye field flat and transverse, with width 1.4–2.0 times larger than length; quadrangle length 39–50% of carapace length; PME closer to PLE than ALE. *Clypeus*: vertical and low; height 15–17% of AME diameter. *Chelicerae*: subvertical and small, with 2 small promarginal teeth and 1 medium retromarginal tooth. *Maxillae*: longer than wide; shape similar in both sexes. *Labium*: small, subvertical, apex rounded and directed anteriorly. *Sternum*: oval. *Abdomen*: oval; 1.3–1.4 times longer than




Figs. 35–39: *Habrocestoides phulchokiensis* sp. n., male. **35** Palp, ventral view; **36** Palp, lateral view; **37** Embolic division, dorsal view; **38** Tibial apophyses, dorsal view; **39** Palpal tibia, lateral view. Scale lines=0.1 mm (35–38), 0.25 mm (39).

wide; males without dorsal scutum. *Spinnerets*: subequal in length and thickness. *Legs*: normal shape; more or less subequal in length and thickness. *Leg formula*: IV,III, I,II or III,IV,I,II in males and IV,III,I,II in females. *Female palp*: normal shape; without apical claw or spines on its segments. *Male palp*: with typical heliophanine-like structure; cymbium of normal form (Fig. 41); palp usually with one or two retrolateral tibial apophyses, but sometimes (e.g. in *C. tibialis*, see Żabka, 1985; figs. 442–443, sub *Phintella t.*) an additional prolateral apophysis also present; embolus fused immovably to tegulum (Figs. 40, 42); distal haematodocha not marked/developed; tegulum looks like a lateral outgrowth of the bulb (arrowed in Fig. 40); functional tegulum is formed by the salticid radix (for more details see above under "morphological notes" on *Habrocestoides*). *Female genitalia*: rather simple, epigynal plate with a round internal structure (=epigynal pocket); copulatory openings widely separated and facing laterally (Fig. 45); epigynal lips not marked; insemination ducts rather wide and usually arranged transversely; boundaries of the receptacles poorly visible or invisible and can only be defined by the rather long glandular ducts (Fig. 46).

*Diagnosis and affinities*: All the Chinese species of *Chinattus* were hitherto considered as members of *Habrocestoides* (Prószyński, 1992a; Xie *et al.*, 1993; Peng & Xie, 1995). However, *Chinattus* can be easily separated from *Habrocestoides* by the following characters: second eye row closer to PLE than ALE (midway in *Habrocestoides*), eye field flat and horizontal (sloping forwards in *Habrocestoides*), male dorsum without scutum (present in *Habrocestoides*), female palpal tarsi without retrolateral spine (present in *Habrocestoides*, Fig. 5), all patellae without spines (patellae III and IV with spines in *Habrocestoides*), male maxillae without lateral outgrowth (present in *Habrocestoides*, Fig. 4), compound terminal apophysis absent (developed as a separate sclerite in *Habrocestoides*, Figs. 31, 34), cymbial pocket absent (present in *Habrocestoides*), epigynal lips not marked (well developed in *Habrocestoides*) (cf. Figs. 45 and 17, 19, 22), copulatory openings facing laterally (medially in *Habrocestoides*) and receptacles poorly distinguishable from insemination ducts (clearly distinguishable in *Habrocestoides*) (cf. Figs. 46, 47 and 18, 20, 23).

It seems likely that these two genera are not only clearly separated, but not even related. *Habrocestoides* is closer to the Aelurillinae (see above), while *Chinattus* seems to be related to *Habrocestum* (only the *H. pullatum* species group), *Phintella* and some other genera currently included in groups 1 and 2 of the Heliophaninae (*sensu* Maddison, 1987). *Chinattus* can be readily separated from other genera in these groups by the presence of the round internal structure of the epigyne (=modified epigynal pocket) (Fig. 45), the arrangement of the insemination ducts (transversely in *Chinattus*, and longitudinally in the others) and the longer glandular ducts (arrowed in Fig. 47).

*Distribution*: All known species have so far been recorded from China and the Caucasus.

## Review of species

***Chinattus caucasicus* sp. n.** (Figs. 40–47)

*Type*: Holotype ♂ (ISE), Azerbaijan, 25–30 km NE of Shemakha, Pirkuli Reservation, 1200–1300 m a.s.l., 7 September 1984 (DL).

*Etymology*: The species is named after the Caucasus, its area of occurrence.

*Diagnosis*: Males of this species are closest to those of *C. furcatus* (see Peng & Xie, 1995: sub *Habrocestoides f.*), but differ in the rounded tip of the embolus and the shape of the tegulum (Fig. 40). Females are similar to those of *C. emeiensis*, but can be separated by the arrangement of the insemination ducts of the spermathecae (cf. Figs. 45, 46 and Peng & Xie, 1995: figs. 10, 11).

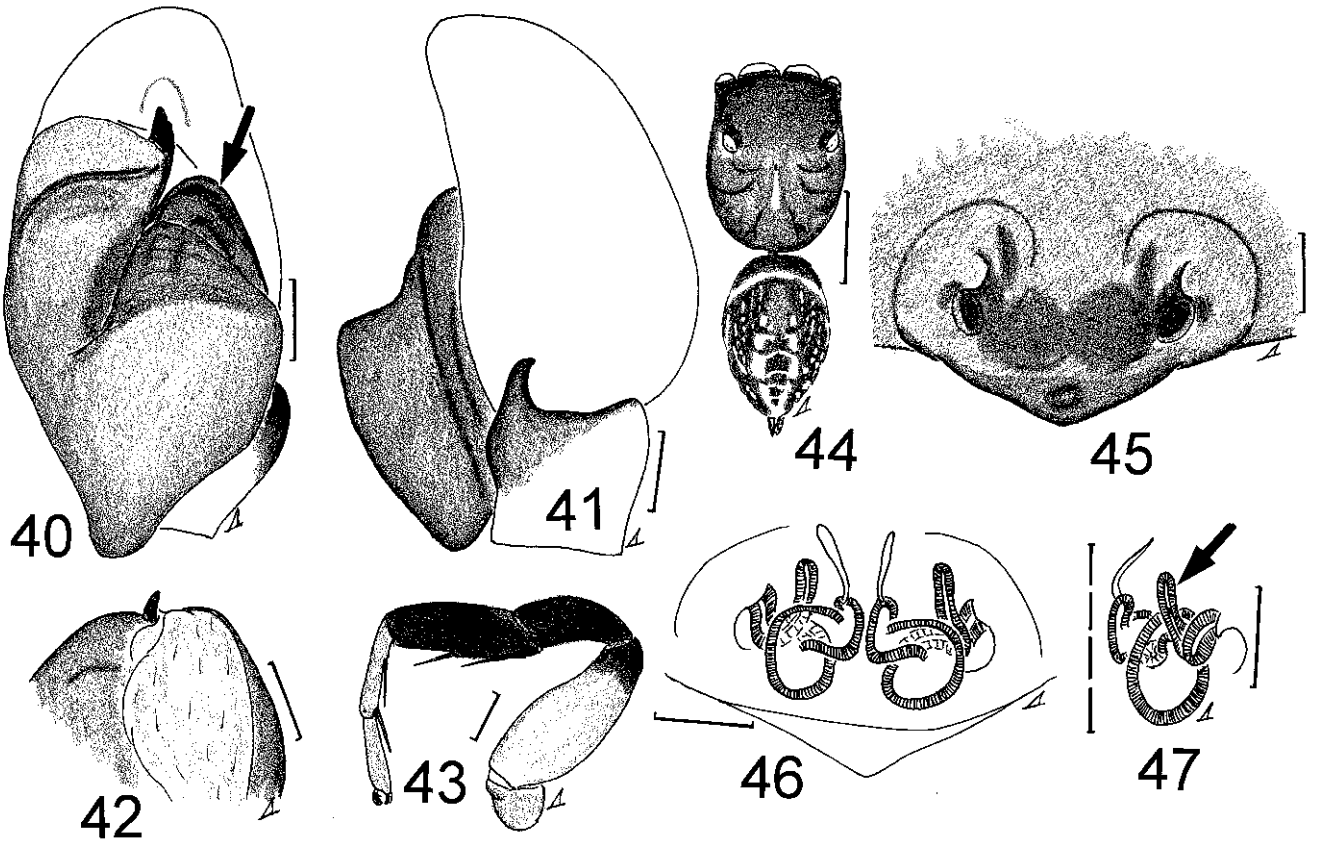
*Distribution*: Iran, E. Georgia, Azerbaijan and Armenia.

*Habitats*: *Fagus, Fagus-Quercus-Carpinus* or *Quercus-Carpinus-Acer* forests, *Platanus* forest; in litter and under stones.

*Description*: *Male* (holotype): Carapace 1.97 long, 1.45 wide, 0.88 high at PLE. Ocular area 0.95 long, 1.30 wide anteriorly and 1.20 wide posteriorly. Diameter of AME 0.45. Abdomen 1.78 long, 1.30 wide. Cheliceral length 0.63. Clypeal height 0.08. Length of leg segments: I 0.99+0.65+0.73+0.55+0.40; II 0.93+0.60+0.60+0.50+0.34; III 1.10+0.53+0.63+0.70+0.43; IV 1.15+0.50+0.73+0.90+0.41. Leg spination: I: Fm d 1ap; Tb pr 0-1-1, v 2-1-1ap; Mt v 2-2ap. II: Fm d 1ap; Tb pr 0-2, v 1-1-1ap; Mt v 2-2ap. III: Fm d 2ap; Pt pr and rt 0-1-0; Tb pr and rt 1-1, v 1-1ap; Mt pr 2ap, rt 1-2ap, v 2-2ap. IV: Fm d 0-0-1-1ap; Pt rt 0-1-0; Tb pr and rt 1-1, v 1-1ap; Mt pr 2ap, rt and v 1-2ap. Coloration: Carapace yellowish brown with dark brown eye field, black around eyes, yellow longitudinal stripe behind fovea (Fig. 44). Eye field sparsely covered with appressed transparent hairs. Clypeus yellow-brown, without scales. Sternum yellow. Maxillae and labium yellow-brown. Chelicerae dark brown. Abdomen: dorsum and sides dark grey with yellow specks, a pale stripe at anterior end and two longitudinal yellow interrupted stripes (Fig. 44); venter yellow. Book-lung covers yellow. Spinnerets yellow, tinged with brown. Leg I dark brown and yellow, as in Fig. 43; other legs yellow, but segment joints brown. Palpal structure as in Figs. 40–42.

*Female*: (paratype from Gaftoni, Lenkoran Distr.): Carapace 2.25 long, 1.60 wide, 1.08 high at PLE. Ocular area 1.03 long, 1.48 wide anteriorly and 1.40 wide posteriorly. Diameter of AME 0.45. Abdomen 2.63 long, 1.80 wide. Cheliceral length 0.85. Clypeal height 0.05. Length of leg segments: I 1.08+0.68+0.58+0.53+0.44; II 1.00+0.63+0.58+0.51+0.35; III 1.38+0.65+0.70+0.80+0.43; IV 1.38+0.60+0.86+ 1.02+0.50. Leg spination: I: Fm d 1ap; Tb v 2-2ap; Mt v 2-2ap. II: Fm d 1ap; Tb pr 0-1, v 1-2-1ap; Mt v 2-2ap. III: Fm d 2ap; Tb pr 0-1, rt 1-1, v 1-1ap; Mt pr and rt 1-2ap, v 2-2ap. IV: Fm d 1ap; Tb pr 0-1, rt 1-1, v 1-1ap; Mt pr 2ap, rt and v 1-2ap. Coloration as male, but lighter. Epigyne and spermathecae as in Figs. 45–47.

*Material examined*: Paratypes: IRAN: 1♀ (SMFM), Masandaran, Elburs Mts., Klard, *c.* 20 km S of Amol,




Figs. 40–47: *Chinattus caucasicus* sp. n., male holotype from Pirkuli and female paratype from Lenkoran. **40** Male palp, ventral view; **41** Ditto, lateral view; **42** Embolic division, apical view; **43** Male leg I, lateral view; **44** Male body; **45** Epigyne, ventral view; **46** Spermathecae, dorsal view; **47** Ditto, ventral view. Scale lines = 0.1 mm (40–42, 45–47), 0.25 mm (43), 1 mm (44).

500 m a.s.l., 24 May 1978 (Martens & Pieper); 1♂ 1♀ (SMFM), Masandaran, Noor Reservation, 29 June 1978 (Martens & Pieper); 1♀ (SMFM), Elburs Mts., N of Tehran, 1000–1300 m a.s.l., 26 May 1978 (Martens & Pieper). AZERBAIJAN: 2♀ (ZMMU), near Lenkoran, 6 October 1984 (K. Aliev); 1♂ (ISE), 3♂ (ZISP), Lenkoran Distr., near Osakyudzha, 14 July 1983 (DL); 1♂ (ZMMU), same distr., near Az-Filial, 2 October 1984 (K. Aliev); 1♀ (ISE), 1♀ (ZISP), same distr., near Gaftoni, 5 May–20 June 1985 (PD); 4♂ 4♀ (ISE), 1♀ (STO), 1♂ 2♀ (ZISP), same distr., Hyrkan Reservation, 17–21 June 1983 (DL); 1♂ (ZMMU), same locality, summer 1983 (SG); 2♂ (ZMMU), *c.* 10 km SE of Lerik, 550 m a.s.l., 12 October 1983 (SG); 1♂ (ISE), Kakhi, 19 June 1977 (PD); 2♂ (ZMMU), Askeran Distr., Karabakh Mts, *c.* 6 km WNW of Dashbulag, near Badara, 2 May 1983 (SG); 1♂ (STO), Ismailly Distr., near Kushendzha, 20 June 1986 (PD); 1♂ 1♀ (ZMMU), *c.* 8 km WSW of Astara, 10–30 m a.s.l., 18 October 1983 (SG); 1♀ (ISE), Astara Distr., Istisu stand, 7 May 1985 (PD); 1♂ 1♀ (ZMMU), same locality, *c.* 6 km SE of Masally, 80–140 m a.s.l., 14–20 October 1983 (SG); 1♀ (ZMMU), SW of Kuba, 750 m a.s.l., 23 April 1987 (SG); 1♂ (ISE), Khanlar Distr., near Chaikend, 20 August 1986 (PD); 1♂ (ISE), Zakataly Distr., Dzhar, 1000 m a.s.l., 11 July 1981 (PD); 1♀ (ZMMU), Khachmas Distr., Nabran', 26 July 1986 (PD); 1♂ (ZMMU), Yardymly Distr., Avash, 1200 m a.s.l., 12 July 1985 (PD). ARMENIA: 1♂ 1♀ (ZMMU), Kafan Distr., Shikahoh Reservation, 30 April 1983 (SG); 1♂ (ZMMU), Agartyn, Dilizhan Reservation, 1250–1300 m a.s.l., 17 April 1983 (SG); 1♀ (ZMMU), Megri Distr., above Kuris, 1500 m a.s.l., 26 April 1983 (SG); 1♀ (ISE), near Sevan Town, 31 July 1983 (DL). GEORGIA: 2♀ (ZMMU), Lagodekhi Reservation, 700–800 m a.s.l., 5 May 1983 (SG).

### *Chinattus emeiensis* (Peng & Xie, 1995), comb. n.

*Habrocestoides emeiensis* Peng & Xie, 1995; 58–59, 64, figs. 8-11 (♀).

### *Chinattus furcatus* (Xie, Peng & Kim, 1993), comb. n.

*Habrocestoides furcatus* Xie *et al.*, 1993: 24, figs. 5–9 (♂).
*Habrocestoides furcatus*: Peng & Xie, 1995: 59, 64, figs. 12–16 (♂).

### *Chinattus sinensis* (Prószyński, 1992), comb. n.

*Habrocestoides sinensis* Prószyński, 1992a: 94, figs. 16–21 (♂).
*Habrocestoides sinensis*: Peng & Xie, 1995: 59–60, 64, figs. 17–22 (♂).

### *Chinattus szechwanensis* (Prószyński, 1992), comb. n.

*Habrocestoides szechwanensis* Prószyński, 1992a: 94–95, figs. 22–27 (♂♀).
*Habrocestoides szechwanensis*: Peng & Xie, 1995: 60, 64, figs. 23–28 (♂♀).

### *Chinattus tibialis* (Żabka, 1985), comb. n.

*Phintella tibialis* Żabka, 1985: 430, figs. 442–443 (♂).

*Phintella tibialis*: Peng *et al*., 1993: 161, figs. 565–568 (♂).
*Habrocestoides tibialis*: Peng & Xie, 1995: 61–62, 64, figs. 29–34 (♂♀).
*Heliophanus geminus* Song & Chai, 1992: 78, fig. 4 (♀). **New synonymy**.

*Comments*: Based on the original figures only (Song & Chai, 1992: fig. 4B,C) (cf. Peng & Xie, 1995: figs. 33, 34), it is safe to conclude that *Heliophanus geminus* is conspecific with *Chinattus tibialis*; the latter is the only *Chinattus* species showing the wide transverse insemination ducts ending in the dumb-bell shaped receptacula.

### *Chinattus undulatus* (Song & Chai, 1992), comb. n.

*Heliophanus undulatus* Song & Chai, 1992: 79, fig. 5 (♀).

*Comments*: The original figures of this species (Song & Chai, 1992: fig. 5, ♀), easily allow me to assign it to the genus *Chinattus*, as the species fits all the female genitalic characters of this genus: epigynal plate with a characteristic internal structure, epigynal lips not marked, copulatory openings facing laterally, rather wide insemination ducts arranged transversely, directed towards each other and ending in poorly distinguishable receptacles.

### *Chinattus validus* (Xie, Peng & Kim, 1993), comb. n.

*Habrocestoides validus* Xie *et al*., 1993: 25, figs. 10–13 (♂).
*Habrocestoides validus*: Peng & Xie, 1995: 62, 64, figs. 35–38 (♂).

### *Chinattus wulingensis* (Peng & Xie, 1995), comb. n.

*Habrocestoides wulingensis* Peng & Xie, 1995: 62, 64, figs. 39–43 (♀).

### *Chinattus wulingoides* (Peng & Xie, 1995), comb. n.

*Habrocestoides wulingoides* Peng & Xie, 1995: 63–64, figs. 44–47 (♀).

## Notes on some additional species

Although two of the species discussed below were hitherto placed in *Habrocestoides* (see Peng & Xie, 1995), they belong neither to *Habrocestoides* nor to *Chinattus*. The current analysis indicates that they are better assigned to *Hasarius*.

### *Hasarius dactyloides* (Xie, Peng & Kim, 1993), comb. n.

*Habrocestoides dactyloides* Xie *et al*., 1993: 23, figs. 1–4 (♂).
*Habrocestoides dactyloides*: Peng & Xie, 1995: 57–58, 64, figs. 1–7 (♂♀).

*Comments*: Peng & Xie (1995) first stated the similarity of this species to *H. kweilinensis*, but the latter is hereinafter shown to belong to *Hasarius* (see below). Indeed, *H. dactyloides* lacks the main diagnostic character of *Chinattus*, i.e. the characteristic round internal structure of the epigyne, and its genital structure, as shown by Peng & Xie (1995), allows the transfer of this species to *Hasarius*. See also comments under *H. orientalis* (below).

### *Hasarius kweilinensis* (Prószyński, 1992), comb. n.

*Habrocestum kweilinensis* Prószyński, 1992a: 96–97, figs. 33–34 (♀).
*Habrocestoides kweilinensis*: Peng & Xie, 1995: 57–58 (T from *Habrocestum*).

*Comments*: See comments under *Hasarius orientalis* (below).

### *Hasarius orientalis* (Żabka, 1985), comb. n.

*Habrocestum orientale* Żabka, 1985: 228–229, figs. 211–216 (♂♀).

*Comments*: This species cannot be placed in *Habrocestum*, *Habrocestoides* or *Chinattus*, as it belongs, as does *H. kweilinensis* (see above), to the so-called fissidentate salticids (see Żabka, 1985: fig. 216), while all the above genera are unidentate. On the other hand, the groundplan of the genitalia in the discussed species (*H. orientalis*, *H. kweilinensis* and *H. dactyloides*) clearly corresponds to that of *Hasarius adansoni* (Audouin, 1826) (see Żabka, 1985: figs. 199–210), the type species of the fissidentate *Hasarius*. It therefore seems better to transfer all these species to *Hasarius*.

*Material examined*: VIETNAM: 1♂ (ISE), Vonk-Phu Prov., Tamdao, 800–1200 m a.s.l., forest, 12–22 April 1986 (L. N. Medvedev & SG).

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