

A new *Drapetisca* species from China and comparison with European *D. socialis* (Sundevall, 1829) (Araneae: Linyphiidae)

Lihong TU¹ & Shuqiang LI²

¹ College of Life Science, Capital Normal University, Beijing 100037, P. R. China

² Institute of Zoology, Chinese Academy of Sciences, Beijing 100080, P. R. China

Corresponding author: Shuqiang Li, e-mail: lisq@ioz.ac.cn

A new *Drapetisca* species from China and comparison with European *D. socialis* (Sundevall, 1829) (Araneae: Linyphiidae). A new *Drapetisca* species, *Drapetisca bicruris* sp. n. is described from China. It has been earlier confused with the European *D. socialis* (Sundevall, 1829). The two species are compared with each other and figures are provided for both species.

Keywords: Taxonomy - Palearctic region - Micronetine - genital structures - specimens.

INTRODUCTION

According to Platnick's spider catalogue (Platnick, 2006), the genus *Drapetisca* Menge, 1866 currently comprises four species: *D. alteranda* Chamberlin, 1909 and *D. oteroana* Gertsch, 1951 from the USA; *D. australis* Forster, 1955 from the Antipodes Island near New Zealand and *D. socialis* (Sundevall, 1833) from the Palearctic region, including China (Li, Song & Zhu, 1994; Tao, Li & Zhu, 1995; Song, Zhu & Chen, 1999; Hu, 2001). Examination of *D. socialis* samples from Europe and comparison with Chinese material previously identified as *D. socialis* deposited in the Institute of Zoology, Chinese Academy of Sciences (IZCAS) and in the Muséum d'histoire naturelle de Genève, Switzerland (MHNG), have revealed that they in fact belong to different species. They share a number of characters, including the same somatic appearance and similar genital structures, but differ in details. Accordingly, a new species, *Drapetisca bicruris* sp. n. is described from the specimens collected in China.

METHODS AND MATERIAL

Specimens were examined and measured under an SZ11-Olympus stereomicroscope. Left palps of males and epigyna of females were illustrated after they were dissected and detached from the spider's body; vulvae were cleared in boiling KOH solution. For examination under a compound microscope, genital organs were immersed in 75% alcohol; embolic divisions and vulvae were mounted in Hoyer's Solution. All illustrations were made under an Olympus BX41 compound microscope by using a drawing tube.

For *D. socialis*, only the reference to the original description is cited in the text. The complete synonymy of this species name is given in Platnick's spider catalogue (Platnick, 2006).

Leg measurements are given in the following sequence: Total (femur, patella + tibia, metatarsus, tarsus). All measurements are in millimetres. Terminology of genital structures follows Saaristo & Tanasevitch (1996). Abbreviations are as follow:

Somatic morphology: AER—anterior eye row; ALE—anterior lateral eye; AME—anterior median eye; AME-ALE—distance between AME and ALE; AME-AME—distance between AMEs; AMEd—diameter of AME; PER—posterior eye row; PLE—posterior lateral eye; PME—posterior median eye; PMEd—diameter of PME.

Male palp: CA—carina; DSS—serrated extension of distal supratégulum; DTA—dorsal tibial apophysis; E—embolus; EP—embolus proper; FG—Fickert's gland; LC—lamella characteristica; MM—median membrane; P—paracymbium; PCA—proximal cymbial apophysis; R—radix; SPT—supratégulum; TA—terminal apophysis; TH—thumb of embolus.

Epigynum: EG—entrance groove; LP—lateral pocket; PMP—posterior median plate; S—spermatheca.

TAXONOMY

Drapetisca bicruris sp. n.

Figs 1-13

Drapetisca socialis Li, Song & Zhu, 1994: 80, f. 20-22; Tao, Li & Zhu, 1995: 245, f. 51-57; Song, Zhu & Chen, 1999: 167, f. 92G-J; Hu, 2001: 496, f. 329.1-3. (Misidentification)

MATERIAL EXAMINED: ♂ holotype, Huangyuan County, Qinghai Province, China, coll. Zhongshan Li, Oct. 1983 (IZCAS). Paratypes: 1 ♂ 2 ♀, same data as holotype (IZCAS); 1 ♂ 1 ♀, Huangyuan County, Qinghai Province, China, coll. Zhongshan Li, Aug. 1983 (MHNG); 2 ♂, Huangyuan County, Qinghai Province, China, coll. Zhongshan Li, Aug. 1983 (IZCAS); 1 ♂ 1 ♀, Mt. Changbaishan, Jilin Province, China, coll. Ye Tao, Sept. 1988 (IZCAS).

ETYMOLOGY: The specific name, Latin: *bicruris* (bifurcate), refers to the fork-shaped apex of the longer branch of the lamella characteristica.

DIAGNOSIS: The male of *D. bicruris* sp. n. can be distinguished by the forked apex of the longer branch of the lamella characteristica (Fig. 4). The female is distinct by the protruding, somewhat four-square, centrally hollowed epigynum (Fig. 9).

DESCRIPTION OF MALE: Total length: 3.10. Carapace: 1.45 long, 1.30 wide. Abdomen: 1.90 long, 1.00 wide. Both sexes similar in general appearance. Carapace pale brown, with black margin. Eyes with black surroundings; AMEs small, others subequal; AER recurved, AME-ALE about AMEd, AME-AME shorter; PER straight, their interdistances shorter than PMEd; ALE and PLE juxtaposed. Chelicera brown, with two macrosetae on base of frontal face; fang groove with five promarginal and five retromarginal teeth, the last one of promargin bifid (Fig. 13). Sternum darker than carapace. Abdomen with white and black spots. Legs pale brown with black alternations. Lengths of legs: I 7.70 (2.25+2.40+2.40+0.65), II 7.45 (2.15+2.30+2.35+0.65), III 5.15 (1.55+1.50+1.55+0.55), IV 7.05 (2.00+2.05+2.25+0.75). Dorsal spines of tibia: 2-2-2-2. Tm I: 0.97. Tm IV present.

Male palp: Patella and tibia each with one dorsal macroseta. Four tibial trichobothria present, one prodorsally, three retrodorsally (Fig. 1). Proximal part of cym-

bium posteriorly prolonged into large, stout apophysis termed here posterior cymbial apophysis (PCA) (Fig. 3), additional lateral apophysis in front of it (Fig. 1). Paracymbium U-shaped, with bifid apex distally, one slender, one triangular; short hairs on basal part. Distal part of suprategulum with serrated extension pointing anteriorly, pit-hook absent (Fig. 8). Embolic division: anterior part of boat-shaped radix turning backwards (Fig. 5); lamella characteristic with large basal part, two narrow branches arising there: anterior one short, furnished with teeth apically, posterior one long, extending posteriorly, accompanying basal part of paracymbium, then turning back with forked apex pointing forwards (Figs 1, 4-6); terminal apophysis strongly sclerotized, extending out from base of lamella characteristic, bifid apically, with one spindle-like and one thin sclerite with scaled outer surface (Fig. 4); embolus short (Figs 5, 7), with large thumb and large sclerotized carina at each side of triangular embolus proper.

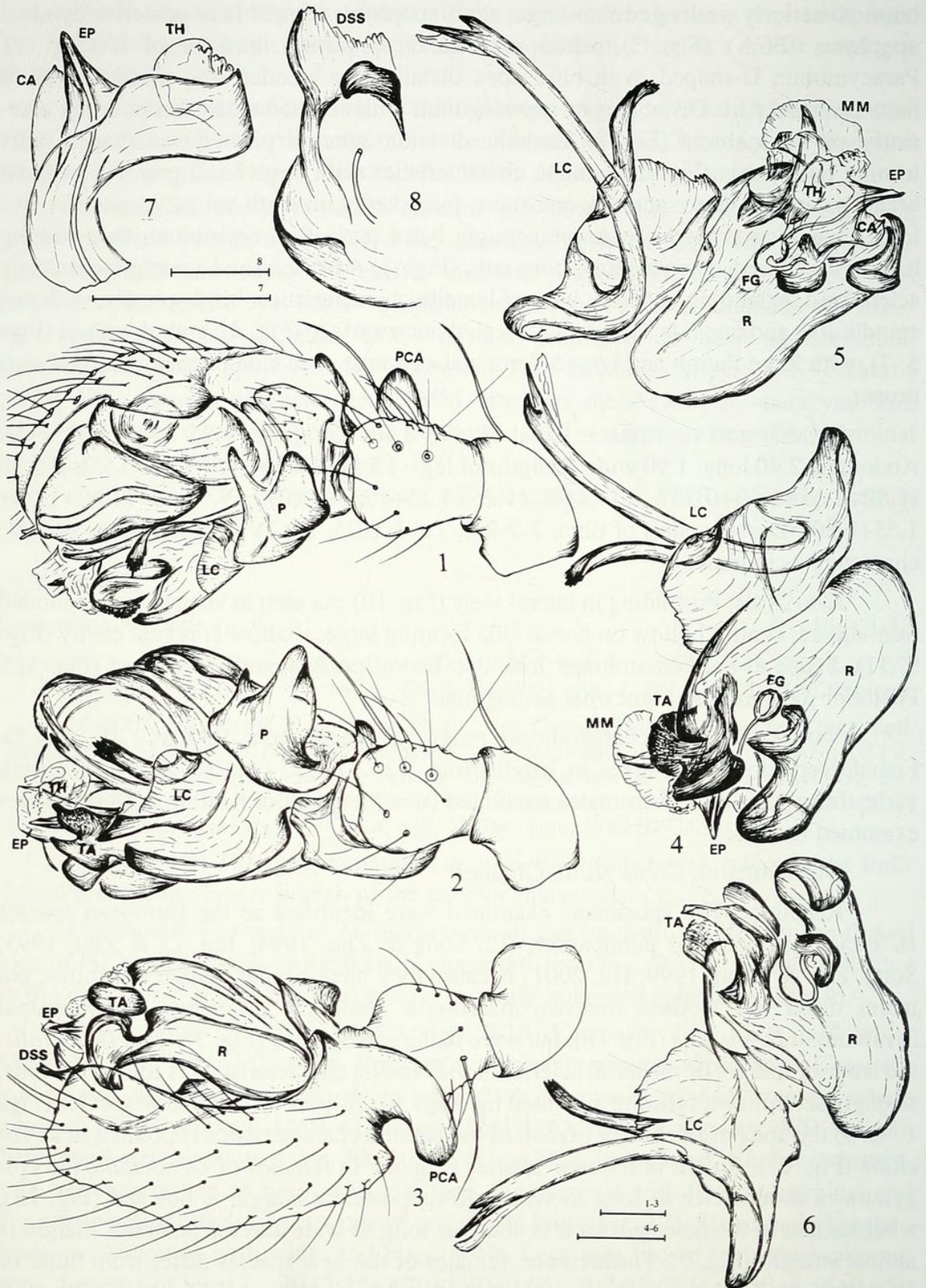
DESCRIPTION OF FEMALE: Total length: 3.40. Carapace: 1.25 long, 1.00 wide. Abdomen: 2.40 long, 1.90 wide. Lengths of legs: I 5.50 (1.60+1.75+1.60+0.55), II 5.40 (1.60+1.65+1.60+0.55), III 3.90 (1.25+1.15+1.10+0.40), IV 5.15 (1.60+1.50+1.55+0.50). Dorsal spines of tibia: 2-2-2-2. Tm I: 0.95. Tm IV present. Other somatic characters as in male.

EPIGYNUM: Protruding in lateral view (Fig. 10). As seen in ventral view, rounded four-square, central hollow on dorsal side forming large, shallow epigynal cavity (Figs 9, 11). Scape as well as stretcher lost, two lateral pockets well-developed (Fig. 12). Posterior median plate somewhat pentagonal.

VARIATION: Male cephalothorax ranges in length from 1.35 to 1.45 (n = 5). Female cephalothorax ranges in length from 1.25 to 1.30 (n = 3). The total length varies from 2.80 to 3.15 in males examined (n = 5) and from 3.10 to 3.40 in females examined (n = 3).

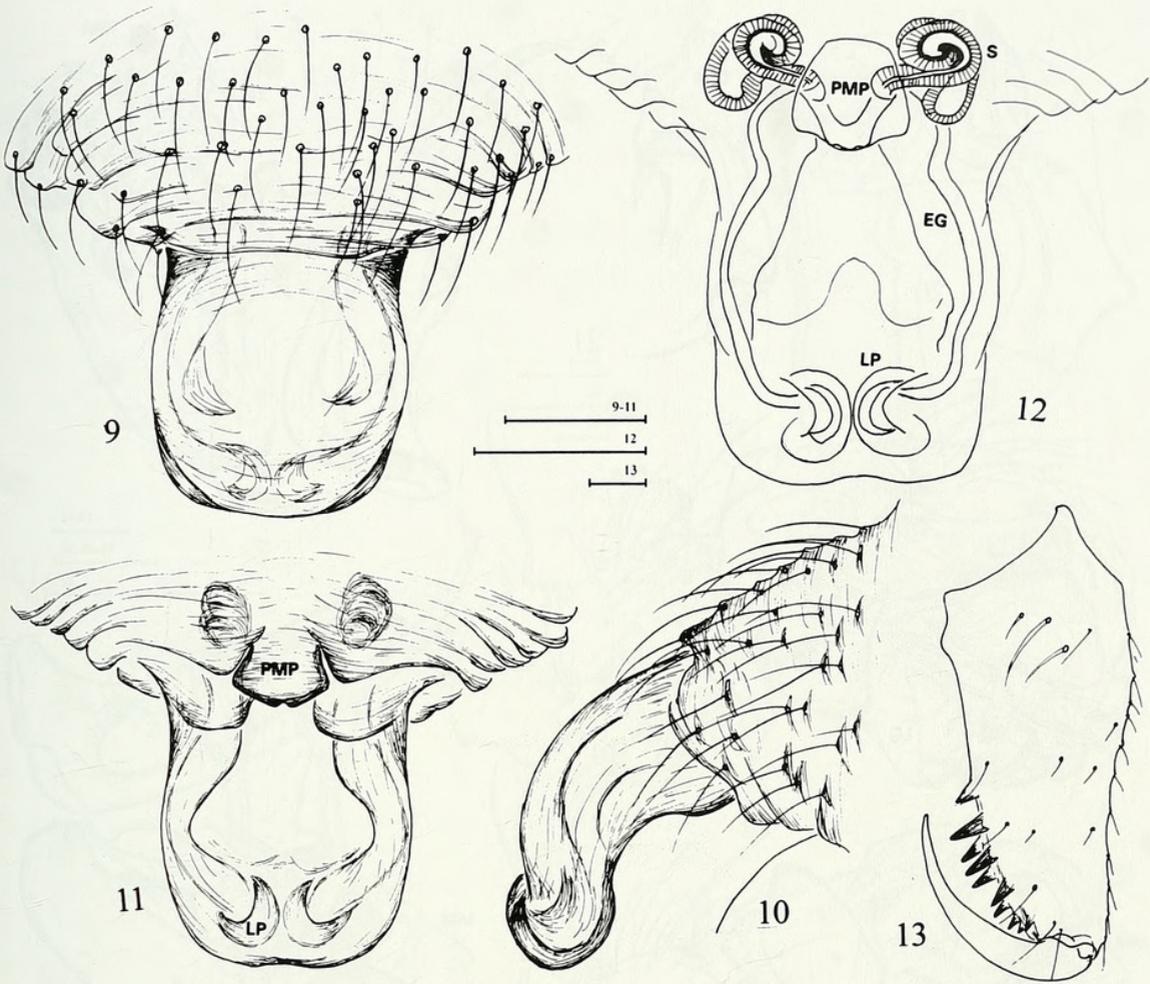
DISTRIBUTION: China (Jilin, Qinghai).

REMARKS: The specimens examined were identified as the European species *D. socialis* in previous publications (Li, Song & Zhu, 1994; Tao, Li & Zhu, 1995; Song, Zhu & Chen, 1999; Hu, 2001) because they have similar genital structures, but males differ by: 1) there are two macrosetae along the promargin of the palpal cymbium in *D. socialis* (Fig. 16), but none in the new species (Fig. 3); 2) in *D. socialis*, the anterior margin of the basal sclerite of the lamella characteristic is folded inwards, strongly sclerotized, forming a pointed tip (Figs 14, 18), not so in the new species (Figs 1, 4); 3) the apex of the longer branch of the lamella characteristic is pointed in *D. socialis* (Fig. 17), forked in the new species (Fig. 4). In females of *D. socialis*, the epigynum is about twice as long as wide and its posterior margin is notched (Fig. 22), whereas that in the new species it is about as long as wide and the posterior margin is almost straight (Fig. 9). Furthermore, females of the new species differ from those of *D. socialis* by having a well-discernable epigynal cavity (Fig. 11).



FIGS 1-8

Drapetisca bicruris sp. n. (male). (1) Left male palp, retrolateral view. (2) Left male palp, ventral view. (3) Left male palp, prolateral view. (4) Embolic division, dorsal view. (5) Embolic division, ventral view. (6) Embolic division (embolus removed), ventral view. (7) Embolus, dorsal view. (8) Distal part of suprategulum, ventral view. [Scale bars: 0.1mm].



FIGS 9-13

Drapetisca bicruris sp. n. (female). (9) Epigynum, ventral view. (10) Epigynum, lateral view. (11) Epigynum, dorsal view. (12) Vulva, dorsal view. (13) Left female chelicera, frontal view. [Scale bars: 0.1mm].

***Drapetisca socialis* (Sundevall, 1833)**

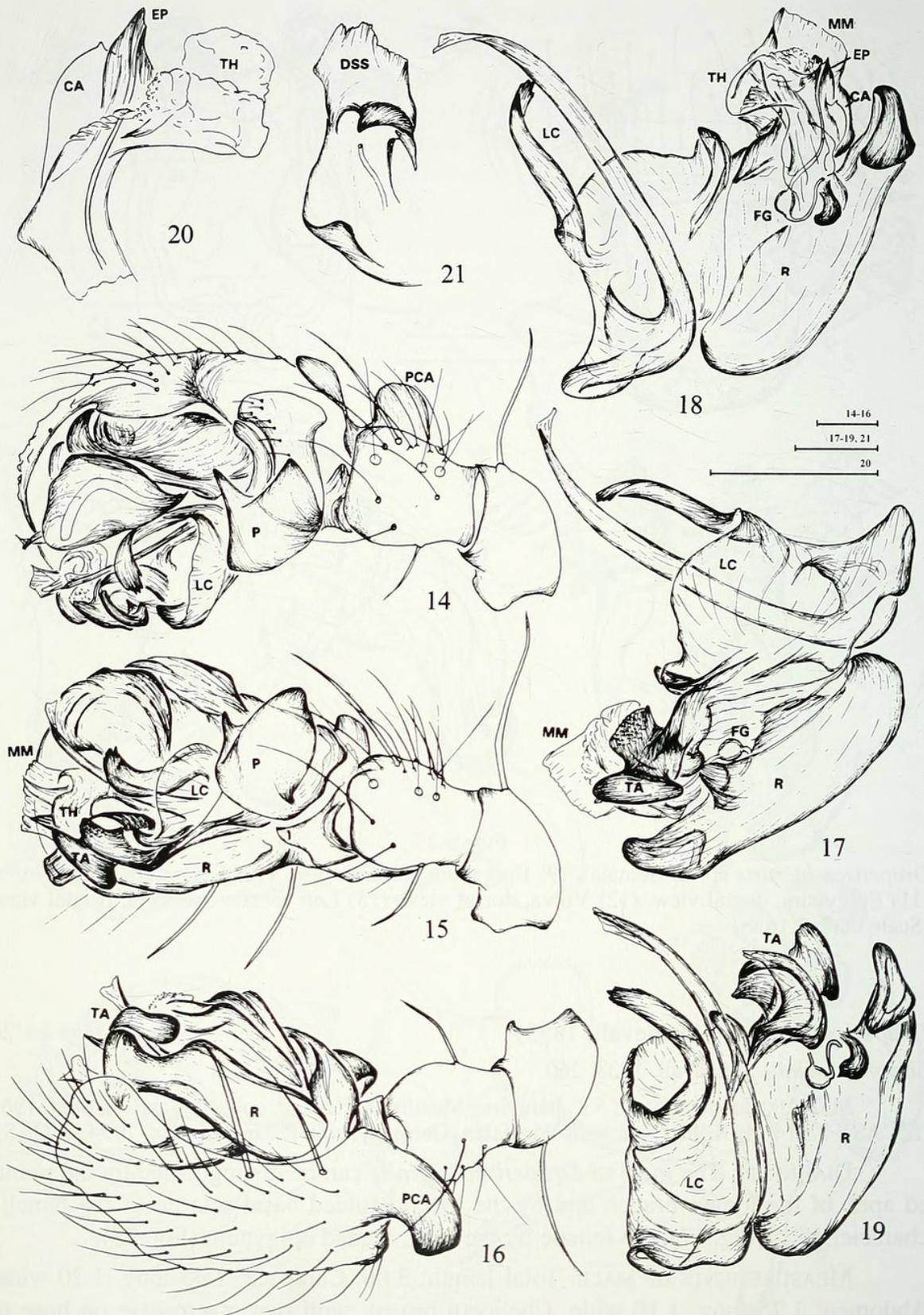
Figs 14-26

Linyphia socialis Sundevall, 1833: 260.

MATERIAL EXAMINED: 5♂5♀, Parainen, Mustfinnö, Finland, coll. M. Saaristo, Sept. 1968 (IZCAS); 2♂1♀, E-Köln, Nordrhein-Westfalen, Germany, coll. P. Jäger, 6 Sept. 1994 (IZCAS).

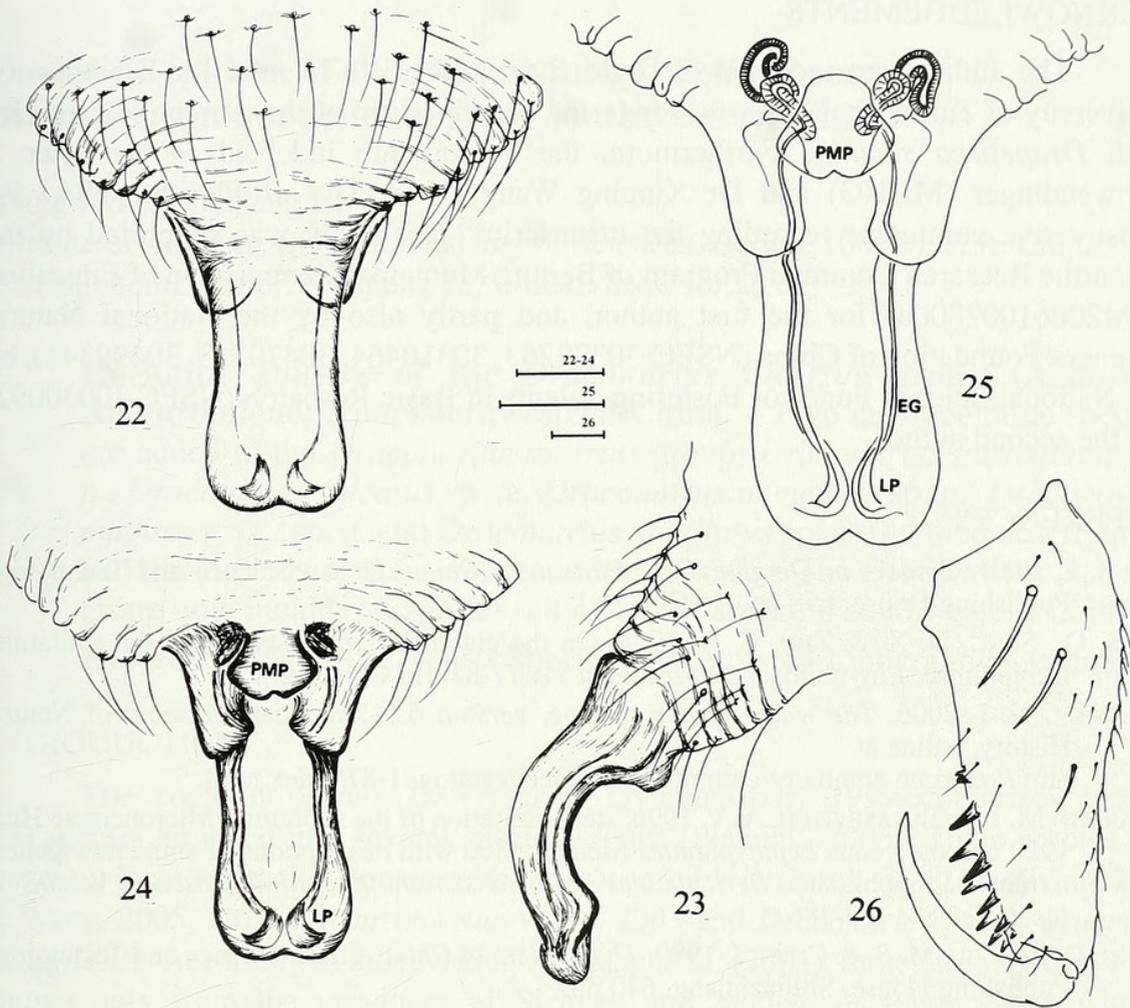
DIAGNOSIS: The male of *Drapetisca socialis* can be distinguished by the pointed apex of the longer branch and by the inward-folded basal sclerite of the lamella characteristica (Fig. 17); the female by the long, arched epigynum (Fig. 23).

MEASUREMENTS OF MALE: Total length: 3.00. Carapace: 1.45 long, 1.20 wide. Abdomen: 1.75 long, 1.10 wide. Chelicera brown, with two macrosetae on base of frontal face; fang groove with six promarginal and five retromarginal teeth, the last one of promargin bifid (Fig. 26). Lengths of legs: I 8.05 (2.25+2.5+2.60+0.70), II 7.60 (2.10+2.35+2.45+0.70), III 5.15 (1.65+1.50+1.60+0.40), IV 7.15 (2.10+2.05+2.35+0.65). Dorsal spines of tibia: 2-2-2-2. Tm I: 0.94. Tm IV present.



Figs 14-21

Drapetisca socialis (Sundevall, 1833) (male). (14) Left male palp, retrolateral view. (15) Left male palp, ventral view; (16) Left male palp, prolateral view. (17) Embolic division, dorsal view. (18) Embolic division, ventral view. (19) Embolic division (embolus removed), ventral view. (20) Embolus, dorsal view. (21) Distal part of supratégulum, ventral view. [Scale bars: 0.1mm].



FIGS 22-26

Drapetisca socialis (Sundevall, 1833) (female). (22) Epigynum, ventral view. (23) Epigynum, lateral view. (24) Epigynum, dorsal view. (25) Vulva, dorsal view. (26) Left female chelicera, frontal view. [Scale bars: 0.1mm]

MEASUREMENTS OF FEMALE: Total length: 3.90. Carapace: 1.60 long, 1.10 wide. Abdomen: 2.80 long, 2.00 wide. Lengths of legs: I 7.05 (2.00+2.30+2.05+0.70), II 6.80 (1.90+2.10+2.20+0.60), III 4.95 (1.45+1.45+1.55+0.50), IV 6.75 (1.90+2.00+2.20+0.65). Dorsal spines of tibia: 2-2-2-2. Tm I: 0.98. Tm IV present.

For other somatic characters and genital structures see descriptions and remarks under *D. bicruris* sp. n.

VARIATION: Male cephalothorax ranges in length from 1.40 to 1.70 (n = 7). Female cephalothorax ranges in length from 1.30 to 1.60 (n = 6). The total length varies from 3.00 to 3.75 in males examined (n = 7) and from 2.90 to 3.90 in females examined (n = 6).

DISTRIBUTION: Palearctic region.

ACKNOWLEDGEMENTS

The authors are indebted to Dr Michael I. Saaristo (Centre for Biodiversity, University of Turku, Finland) who suggested a comparison of the current new species with *Drapetisca socialis*. Furthermore, the authors are indebted to Dr Peter J. Schwendinger (MHNG) and Dr Xinping Wang (University of Florida, USA) for constructive comments regarding the manuscript. This study was supported by the Scientific Research Common Program of Beijing Municipal Commission of Education (KM200610028008) for the first author, and partly also by the National Natural Sciences Foundation of China (NSFC-30370263, 30310464, 30470213, 30499341), by the National Science Fund for Fostering Talents in Basic Research (NSFC-J0030092) for the second author.

REFERENCES

- HU, J. L. 2001. *Spiders in Qinghai-Tibet Plateau of China*. Henan Science and Technology Publishing House, 658 pp. [In Chinese].
- LI, S. Q., SONG, D. X. & ZHU, C. D. 1994. On the classification of spiders of the subfamily Linyphiinae, Linyphiidae. *Sinozoologia* 11: 77-82. [In Chinese].
- PLATNICK, N. I. 2006. *The world spider catalog, version 6.5*. American Museum of Natural History, online at <http://research.amnh.org/entomology/spiders/catalog81-87/index.html>.
- SAARISTO M. I. & TANASEVITCH, A. V. 1996. Redelimitation of the subfamily Micronetinae Hull, 1920 and the genus *Lepthyphantes* Menge, 1866 with descriptions of some new genera (Aranei, Linyphiidae). *Berichte des Naturwissenschaftlich-Medizinischen Vereins in Innsbruck* 83: 163-186.
- SONG, D. X., ZHU, M. S. & CHEN, J. 1999. *The Spiders of China*. Hebei Science and Technology Publishing House, Shijiazhuang, 640 pp.
- SUNDEVALL, J. C. 1833. Svenska spindlarnes beskrifning. Fortsättning och slut. *Kongliga Svenska Vetenskaps-Akademiens Handlingar* 1832: 171-272.
- TAO, Y., LI, S. Q. & ZHU, C. D. 1995. Linyphiid spiders of Changbai Mountains, China (Araneae: Linyphiidae: Linyphiinae). *Beiträge zur Araneologie* 4: 241-288.



Tu, Lihong and Li, Shuqiang. 2006. "A new *Drapetisca* species from China and comparison with European *D. socialis* (Sundevall, 1829) (Araneae: Linyphiidae)." *Revue suisse de zoologie* 113, 769–776.
<https://doi.org/10.5962/bhl.part.80373>.

View This Item Online: <https://www.biodiversitylibrary.org/item/128493>

DOI: <https://doi.org/10.5962/bhl.part.80373>

Permalink: <https://www.biodiversitylibrary.org/partpdf/80373>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: Muséum d'histoire naturelle - Ville de Genève

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.