



Research article

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Review of the spider genus *Devade* Simon, 1885 (Araneae: Dictynidae) from China

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Abstract. The dictynid spider genus *Devade* from China is revised, and two species from Xinjiang are described: *D. longa* sp. nov. (♂♀) and *D. pulla* sp. nov. (♂♀). *Devade mongolica* Esyunin & Marusik, 2001 is recorded from China for the first time, and *D. qiemuensis* (Hu & Wu, 1989) stat. rev. is revalidated from the synonymy of *D. tenella* (Tyshchenko, 1865). Males of *D. mongolica* Esyunin & Marusik, 2001 and *D. qiemuensis* (Hu & Wu, 1989) are described for the first time. Detailed morphological descriptions, photographs, illustrations of copulatory organs and distribution maps of the four species are provided.

Keywords. Description, morphology, new species, revalidation, taxonomy.

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Introduction

Devade Simon, 1885 is a small genus of Dictynidae O. Pickard-Cambridge, 1871 containing 10 species, mainly distributed in the Mediterranean, Near East and Central Asia (WSC 2025). Although the genus has never been revised in full, there are several regional revisions of *Devade* from the Caucasus, Iran, Central Asia and Mongolia: Esyunin & Efimik (2000), Esyunin & Marusik (2001) and Zamani &

Marusik (2017). Until now, only one species, *D. qiemuensis* (Hu & Wu, 1989), has been described from China, which previously was considered a junior synonym of *D. tenella* (Tystshenko, 1965) by Esyunin & Marusik (2001) (WSC 2024).

Our study of Chinese Dictynidae reveals that the diversity of *Devade* in northwestern China is composed of four species, viz. two new species, a newly recorded species and the revalidated species, *D. qiemuensis*. The goal of this paper is to provide full descriptions, photographs and illustrations of these species.

Material and methods

All specimens are preserved in 75% ethanol and were examined, illustrated, photographed and measured using a Leica M205A stereo microscope equipped with a drawing tube, a Leica DFC450 Camera and LAS software (ver. 4.6). Male palps and epigynes were examined and illustrated after they were dissected from the specimens. Epigynes were cleared by immersing them in a pancreatin solution (Álvarez-Padilla & Hormiga 2007). Eye sizes were measured as the maximum dorsal diameter. Leg measurements are shown as: total length (femur, patella and tibia, metatarsus, tarsus). All measurements are in millimetres.

Specimens examined here are deposited in the Collection of Spiders, School of Life Sciences, Southwest University, Chongqing, China (SWUC). Terminology follows Zamani & Marusik (2017).

Abbreviations (used in the text)

AA	=	anterior arm of conductor
ALE	=	anterior lateral eye
AME	=	anterior median eye
BF	=	basidorsal fold of cymbium
CO	=	copulatory opening
Em	=	embolus
FD	=	fertilization duct
MOA	=	median ocular area
MPA	=	Mesal process of conductor posterior arm
PLE	=	posterior lateral eye
PME	=	posterior median eye
RPA	=	retrolateral process of conductor posterior arm
RTA	=	retrolateral tibial apophysis
Se	=	septum
Sp	=	spermatheca

Results

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Dictynidae O. Pickard-Cambridge, 1871 (卷叶蛛科)
Genus *Devade* Simon, 1885 (带蛛属)

Diotima Simon, 1880: 55; type *D. hirsutissima* Simon, 1880.

Devade Simon, 1885: 323; replacement name for *Diotima*, preoccupied.

Pseudauximus Denis, 1955: 452; type *P. libanicus* Denis, 1955. Generic name preoccupied, syn. of *Devade* according to Lehtinen (1967: 228).

Strinatinnella Denis, 1957: 448; type *S. spinosa* Denis, 1957, considered a junior synonym of *Devade* by Lehtinen (1967: 228).

Momius Andreeva & Tyshchenko, 1969: 380; type *M. hispidus* Andreeva & Tyshchenko, 1969 = *Devade* (Marusik 1989: 49).

Type species

Diotima hirsutissima Simon, 1880 (considered a junior synonym of *Amaurobius indistinctus* O. Pickard-Cambridge, 1872).

Differential diagnosis

Molecular analysis reveals that *Saltonia* Chamberlin & Ivie, 1942 is the sister taxon to *Devade*, and together they form a clade that is sister to another group containing *Argyroneta* Latreille, 1804 (Crews *et al.* 2020; Gorneau *et al.* 2023). *Devade* is most similar to the Palearctic monotypic water spider genus *Argyroneta* (Zhang & Wang 2017: fig. 7) in having a laminar retrolateral tibial apophysis, lacking distinct copulatory ducts, and having small, spherical spermathecae, but it differs by the distinct fold at the base of the cymbium in dorsal view (vs absent in *Argyroneta*), two large processes on the posterior arm of the conductor (vs only one), presence of a septum (vs absent), fertilization ducts originating from the posterior part of the spermathecae (vs prolateral), smaller size of less than 6 mm (vs > 8 mm), tracheal spiracle near spinnerets (vs near epigastral fold) and cribellum and calamistrum present (vs absent in *Argyroneta*).

Devade is also similar to the Nearctic monotypic genus *Saltonia* Chamberlin & Ivie, 1942 (Chamberlin & Ivie 1942: 24, pl. 2 Figs 24–25; Crews *et al.* 2020: 914, fig. 22a–l) in having a similar habitus, morphology of the male palp, and saline habitat, but it differs in the cymbial basidorsal fold fingernail edge-shaped present dorsally (vs curved, present retrolaterally at the base of cymbium in *Saltonia*) and epigyne with distinct epigynal septum (vs indistinct in *Saltonia*).

Description

Small size (3–6 mm). Carapace yellowish brown to brown. Eight eyes. Fovea longitudinal. Cervical groove indistinct, radial furrows distinct. Chelicerae, yellow-brown. Labium and endites yellow-brown, longer than wide. Sternum yellow-brown and scutellate. Chelicerae with 2–3 promarginal and 2 retromarginal teeth. Legs yellow-brown. Leg formula: 4123. Calamistrum absent in male and weak in female (Fig. 1C–D). Abdomen oval, dorsum yellow-brown to dark brown, with a few light chevrons dorsally. Venter of abdomen yellowish brown, with small and undivided cribellum (Fig. 1A–B).

Male palp (Figs 2A–C, 3C–E, 4A–C, 5C–E, 6A–C, 7C–E, 8A–C, 9C–E, 10C–E). Tibia as long as cymbium or shorter. Retrolateral tibial apophysis laminar and directed ventrally. Cymbium longer than wide, narrow towards tip, with basidorsal fold (BF). Posterior arm of conductor with 2 large processes: mesal process narrow and hook-like, with pointed end; retrolateral process wide and laminar. Embolus originating at about 11:30–12 o'clock position; distal part of embolus resting in long groove of conductor.

Epigyne (Figs 2D–E, 3F–G, 4D–E, 5F–G, 6D–E, 7F–G, 8D–E, 9F–G, 10F–G). Septum longer than wide, located in a fovea (*D. longa* and *D. pulla*) or reaching epigastral fold (*D. mongolica* and *D. qiemuensis*). Copulatory openings slit-like. Copulatory ducts extremely short, located on the ventral or retrolateral side of spermathecae. Spermathecae spherical, ½ times as long as septum. Fertilization ducts hook-like.

Composition

Devade dubia Caporiacco, 1934 (♀, from Karakoram), most likely misplaced (Lehtinen 1967), *D. indistincta* (O. Pickard-Cambridge, 1872) (♂♀, Mediterranean), *D. kazakhstanica* Esyunin & Efimik,

2000 (♀, Kazakhstan), *D. lehtineni* Esyunin & Efimik, 2000 (♀, Kazakhstan), *D. libanica* (Denis, 1955) (♀, Lebanon, may be a synonym of *D. indistincta*), *D. longa* sp. nov. (♂♀, China), *D. miranda* Ponomarev, 2007 (♂, Kazakhstan, may be a junior synonym of species known only from females), *D. mongolica* Esyunin & Marusik, 2001 (♂♀, China and Mongolia), *D. naderii* Zamani & Marusik, 2017 (♂, Iran), *D. pulla* sp. nov. (♂♀, China), *D. pusilla* Simon, 1911 (♂, Algeria), *D. qiemuensis* (Hu & Wu, 1989) stat. rev. (♂♀, China) and *D. tenella* (Tyshchenko, 1965) (♂♀, from Cyprus, Ukraine to West China, Iran, most references based on misidentifications).

Distribution

From the West Mediterranean to Eastern Transbaikalia and eastern Inner Mongolia (China), south to Algeria, Egypt, northern Pakistan, and ca 37° N in China, southern France, Serbia, South Urals (ca 52° N) and Tuva (ca 51° N) (Esyunin & Marusik 2001; WSC 2025).

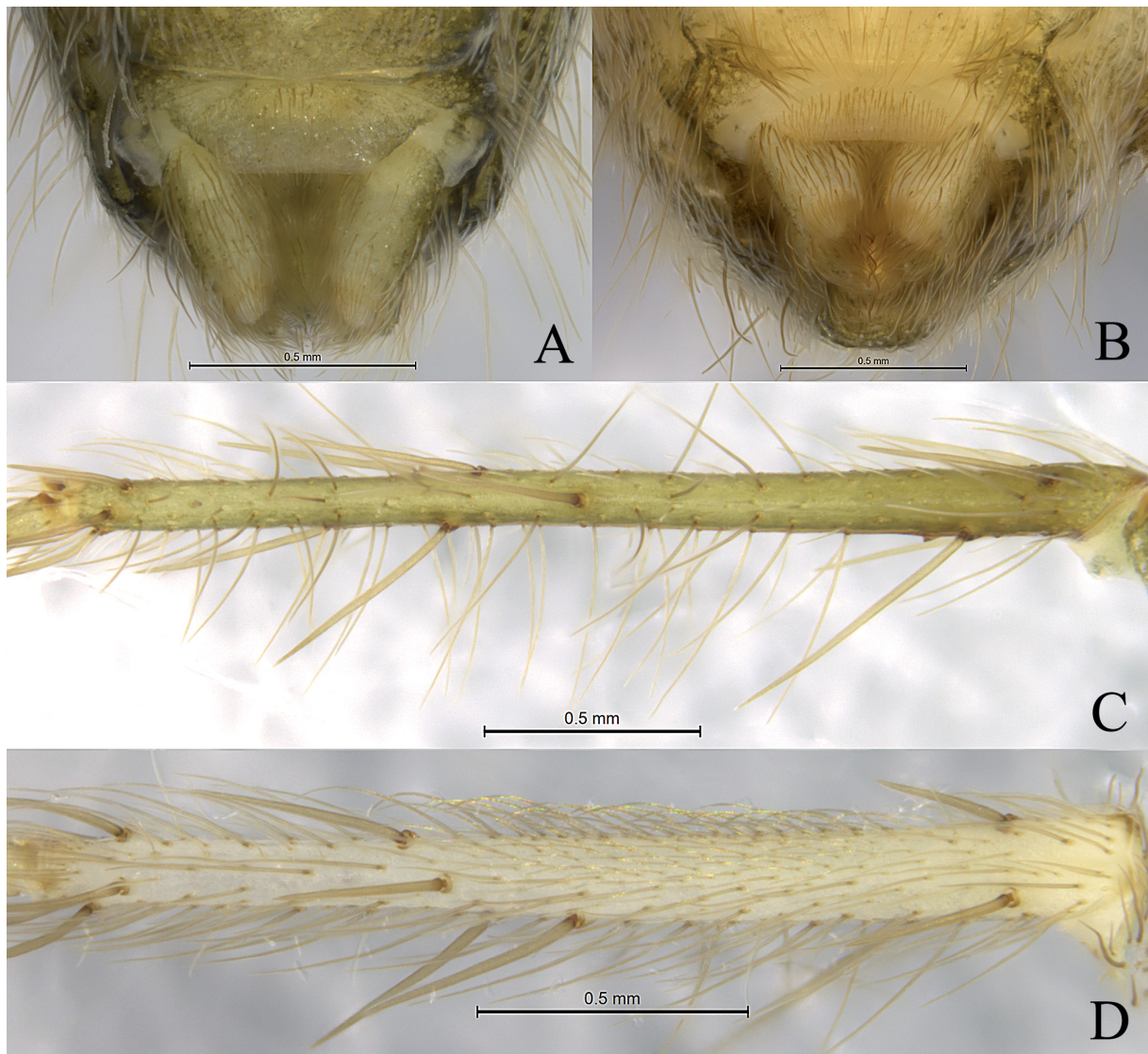


Fig. 1. *Devade pulla* sp. nov. cribellum (A–B, ventral view) and calamistrum (C–D, lateral view). **A,** **C.** Holotype, ♂ (SWUC-T-DI-21-01). **B, D.** Paratype, ♀ (SWUC-T-DI-21-02). **C.** Metatarsus of leg I. **D.** Metatarsus of leg I. Scale bars = 0.5 mm.

Comments

West Mediterranean species have never been redescribed, and *Strinatinella spinosa* Denis, 1957 and *D. hirsutissima*, considered a junior synonyms of *Devade indistincta*, may represent valid species.

Key to the species of *Devade* Simon, 1885 from China

1. Male 2
– Female 5
2. Palpal tibia as long as cymbium *D. longa* sp. nov.
– Palpal tibia shorter than cymbium 3
3. Palpal tibia shorter than half the length of cymbium *D. mongolica* Esyunin & Marusik, 2001
– Palpal tibia longer than half the length of cymbium 4
4. Posterior arm of mesal process of conductor wide and strong *D. pulla* sp. nov.
– Posterior arm of mesal process of conductor narrow and thin
..... *D. qiemuensis* (Hu & Wu, 1989) stat. rev.
5. Length of the epigynal septum 2 times the width 6
– Length of epigynal septum 3 times the width 7
6. Copulatory openings separated by 3 times the spermathecae diameter *D. longa* sp. nov.
– Copulatory openings separated by 4 times the spermathecae diameter *D. pulla* sp. nov.
7. Posterior end of septum semi-circular *D. mongolica* Esyunin & Marusik, 2001
– Posterior end of septum truncate *D. qiemuensis* (Hu & Wu, 1989) stat. rev.

Devade longa sp. nov.

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Figs 2–3, 11

Chinese name

长带蛛

Differential diagnosis

The new species resembles *D. qiemuensis* (Figs 8–10) in having a longer palpal tibia (longer than half of the length of the cymbium), the fingernail edge-shaped basidorsal fold (BF) of the cymbium and similar spermathecae, but it differs by having the tibia as long as the cymbium (Figs 2A–C, 3C–E) (vs shorter, Figs 8A–C, 9C–E, 10C–E), the anterior side of the mesal process of the conductor posterior arm with a notch (Figs 2B, 3D) (vs lacking, Figs 8B, 9D, 10D), and the short septum, ca 2 times as long as wide (Figs 2D, 3F) (vs 3 times as long as wide Figs 8D, 9F, 10F).

Etymology

The specific epithet comes from the Latin adjective ‘*longus*’, meaning ‘long’, and refers to the longer tibia of the male palp.

Type material**Holotype**

CHINA • ♂; Xinjiang, Bole City, Aibi Lake; 44°57'40" N, 82°38'38" E; elev. 257 m; 12 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-T-DI-20-01.

Paratypes (5 ♂♂, 8 ♀♀)

CHINA • 4 ♂♂, 8 ♀♀; same data as for holotype; SWUC-T-DI-20-02 to SWUC-T-DI-20-13 • 1 ♂; Xinjiang, Alashankou; 45°11'33" N, 82°36'02" E; elev. 328 m; 12 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-T-DI-20-14.

Description

Male (holotype SWUC-T-DI-20-01, Fig. 3A)

MEASUREMENTS. Total length 5.21. Carapace 2.34 long, 1.88 wide; abdomen 2.80 long, 1.54 wide. Eye sizes and interdistances: AME 0.11, ALE 0.13, PME 0.11, PLE, 0.11; AME–AME 0.06, AME–ALE 0.02, PME–PME 0.11, PME–PLE 0.08, ALE–PLE 0.05. MOA 0.33 long, anterior width 0.27, posterior width 0.33. Clypeus height 0.15.

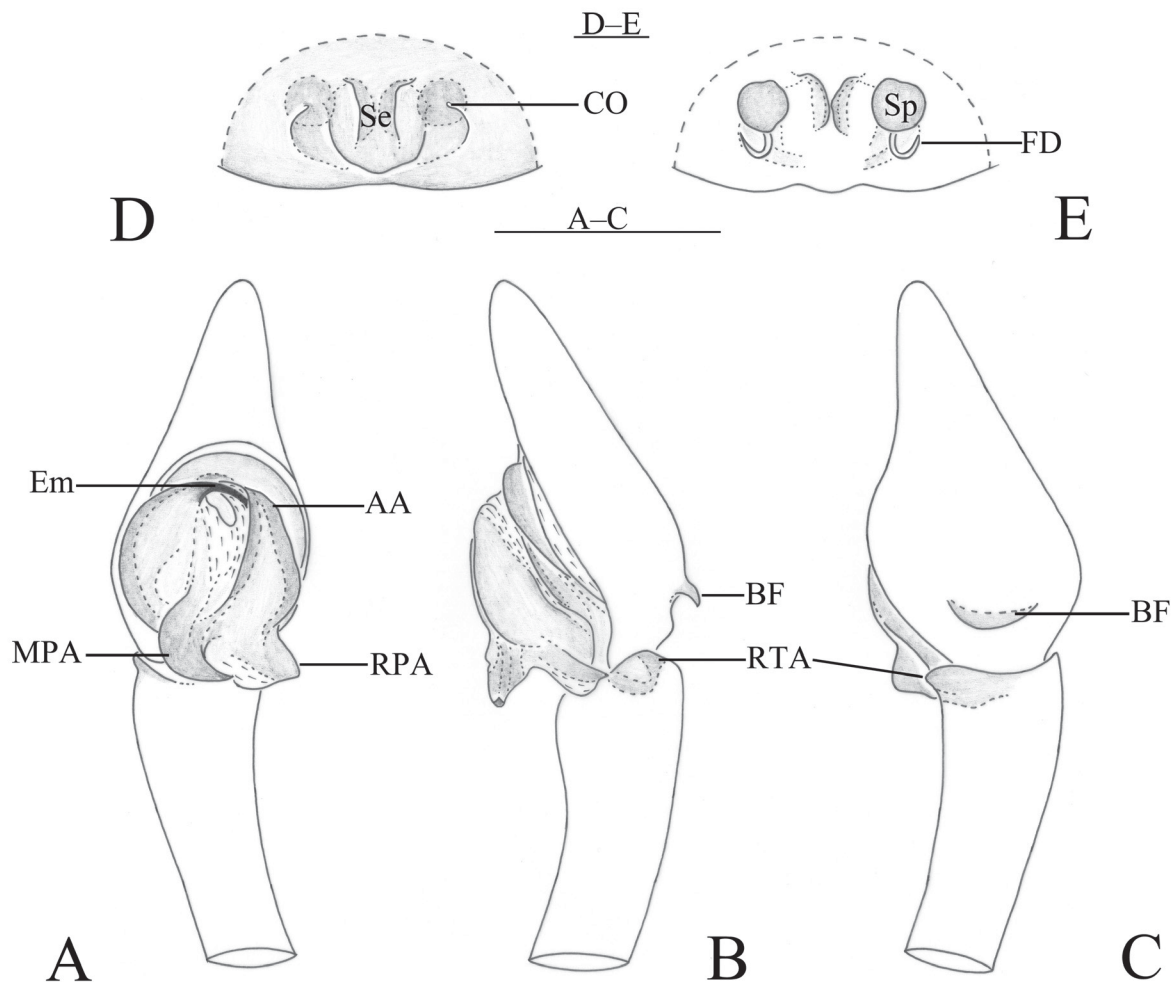


Fig. 2. *Devade longa* sp. nov. **A–C.** Holotype, ♂ (SWUC-T-DI-20-01). **D–E.** Paratype, ♀ (SWUC-T-DI-20-02). **A.** Left palp, ventral view. **B.** Left palp, retrolateral view. **C.** Left palp, dorsal view. **D.** Epigyne, ventral view. **E.** Vulva, dorsal view. Abbreviations: AA = anterior arm of conductor; BF = basidorsal fold of cymbium; CO = copulatory opening; Em = embolus; FD = fertilization duct; MPA = mesal process of conductor posterior arm; RPA = retrolateral process of conductor posterior arm; RTA = retrolateral tibial apophysis; Se = septum; Sp = spermatheca. Scale bars: A–C = 0.5 mm; D–E = 0.2 mm.

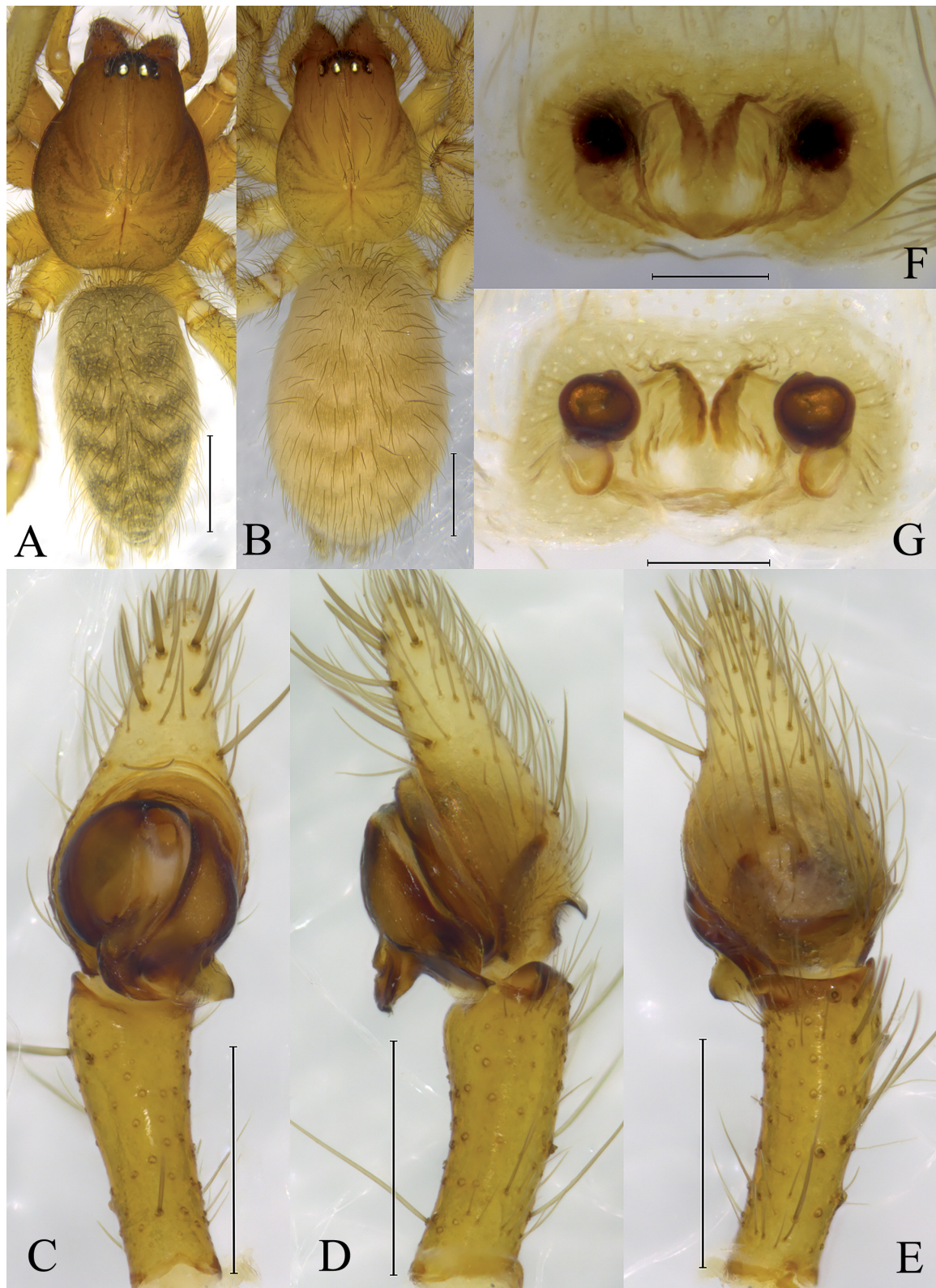


Fig. 3. *Devade longa* sp. nov. **A, C–E.** Holotype, ♂ (SWUC-T-DI-20-01). **B, F–G.** Paratype, ♀ (SWUC-T-DI-20-02). **A.** Habitus, dorsal view. **B.** Habitus, dorsal view. **C.** Left palp, ventral view. **D.** Same, retrolateral view. **E.** Same, dorsal view. **F.** Epigyne, ventral view. **G.** Vulva, dorsal view. Scale bars: A–B = 1 mm; C–E = 0.5 mm; F–G = 0.2 mm.

CARAPACE. Brown, cephalic part darker than thoracic; pattern weakly developed, with dark margins and dark radial stripes.

CHELICERAE. With 3 promarginal and 2 retromarginal teeth.

LEG MEASUREMENTS. I = 7.46 (2.00, 2.65, 1.73, 1.08); II = 7.25 (1.92, 2.47, 1.74, 1.12); III = 7.08 (1.92, 2.47, 1.74, 1.12); IV = 8.95 (2.30, 2.90, 2.45, 1.30).

ABDOMEN. Light brown with ca 8–9 dark transverse chevrons.

PALP (Figs 2A–C, 3C–E). Tibia long, almost as long as cymbium. Retrolateral tibial apophysis laminar and directed ventrally. Basidorsal fold (BF), fingernail edge-shaped in dorsal view. Posterior arm of conductor with 2 large processes: mesal process narrow and hook-like, with pointed tip; retrolateral process wide and laminar. Embolus originating at about 11:30 o'clock position, distal part hidden by conductor.

Female (paratype SWUC-T-DI-20-02, Fig. 3B)

MEASUREMENTS. Total length 6.04. Carapace 2.39 long, 1.80 wide; abdomen 3.50 long, 2.25 wide. Eye sizes and interdistances: AME 0.11, ALE 0.12, PME 0.11, PLE, 0.12; AME–AME 0.07, AME–ALE 0.04, PME–PME 0.13, PME–PLE 0.09, ALE–PLE 0.06. MOA 0.33 long, anterior width 0.28, posterior width 0.35. Clypeus height 0.13.

LEG MEASUREMENTS. I = 7.27 (2.11, 2.46, 1.61, 1.09); II = 6.81 (1.98, 2.25, 1.56, 1.02); III = 6.39 (1.66, 2.01, 1.74, 0.98); IV = 8.37 (2.23, 2.84, 2.20, 1.10).

CARAPACE AND ABDOMEN. Same morphological pattern as in male except lighter in color.

EPIGYNE (Figs 2D, 3F). Epigynal plate 1.7 times as wide as long; fovea as long as wide; septum 2 times as long as wide. Copulatory openings fissured, separated by 3 times width of septum.

VULVA (Figs 2E, 3G). Copulatory ducts indistinct. Spermathecae globular, separated by almost 2 times their diameters, anterior part with glandular shallow extension. Fertilization ducts hook-like and diverging.

Distribution

China (Xinjiang) (Fig. 11).

Devade mongolica Esysunin & Marusik, 2001
Figs 4–5, 11

Devade mongolica Esysunin & Marusik, 2001: 129, fig. 1 (♀).

Chinese name

蒙古帶蛛

Differential diagnosis

The male of this species resembles *D. pusilla* (Lehtinen 1967: 450, fig. 284) in having a short palpal tibia, almost half the length of the cymbium, but it differs from the latter by the mesal process of the conductor posterior arm almost directed towards the ventral in retrolateral view (Figs 4B, 5D) (vs towards retrolateral), and the retrolateral process is pointed (Figs 4B–C, 5D–E) (vs rounded). The female of this species is most similar to *D. qiemuensis* (Figs 8D–E, 9F–G, 10 F–G) in having a long,

narrow septum, almost reaching the epigastral fold, but it differs from the latter by the rounded end of the septum (Figs 4D, 5F) (vs truncate, Figs 8D, 9F, 10F).

Material examined

CHINA • 13 ♂♂, 24 ♀♀; Xinjiang, Hutubi Co., Xidaqiao; 44°12'04" N, 86°51'53" E; elev. 526 m; 19 Apr. 2022; Y.S. Yang leg.; SWUC-DIDM-01 to SWUC-DIDM-37.

Description

Male (SWUC-DIDM-01, Fig. 5A)

MEASUREMENTS. Total length 3.02. Carapace 1.47 long, 1.12 wide; abdomen 1.57 long, 0.94 wide. Eye sizes and interdistances: AME 0.09, ALE 0.08, PME 0.08, PLE, 0.09; AME–AME 0.05, AME–ALE 0.01, PME–PME 0.06, PME–PLE 0.04, ALE–PLE 0.02. MOA 0.23 long, anterior width 0.22, posterior width 0.25. Clypeus height 0.05.

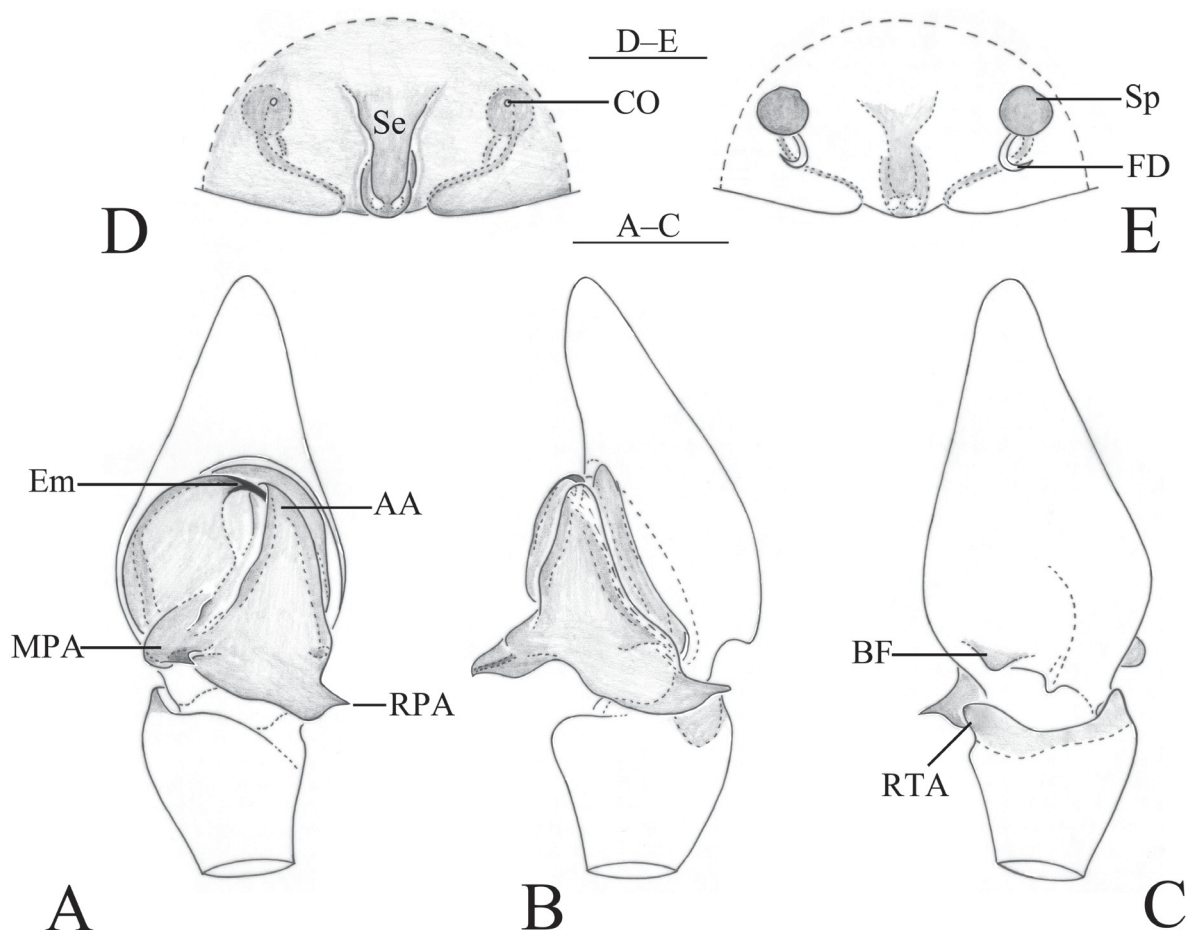


Fig. 4. *Devade mongolica* Esyunin & Marusik, 2001. **A–C.** Male (SWUC-DIDM-01). **D–E.** Female (SWUC-DIDM-02). **A.** Left palp, ventral view. **B.** Same, retrolateral view. **C.** Same, dorsal view. **D.** Epigyne, ventral view. **E.** Vulva, dorsal view. Abbreviations: AA = anterior arm of conductor; BF = basidorsal fold of cymbium; CO = copulatory opening; Em = embolus; FD = fertilization duct; MPA = mesal process of conductor posterior arm; RPA = retrolateral process of conductor posterior arm; RTA = retrolateral tibial apophysis; Se = septum; Sp = spermatheca. Scale bars = 0.2 mm.

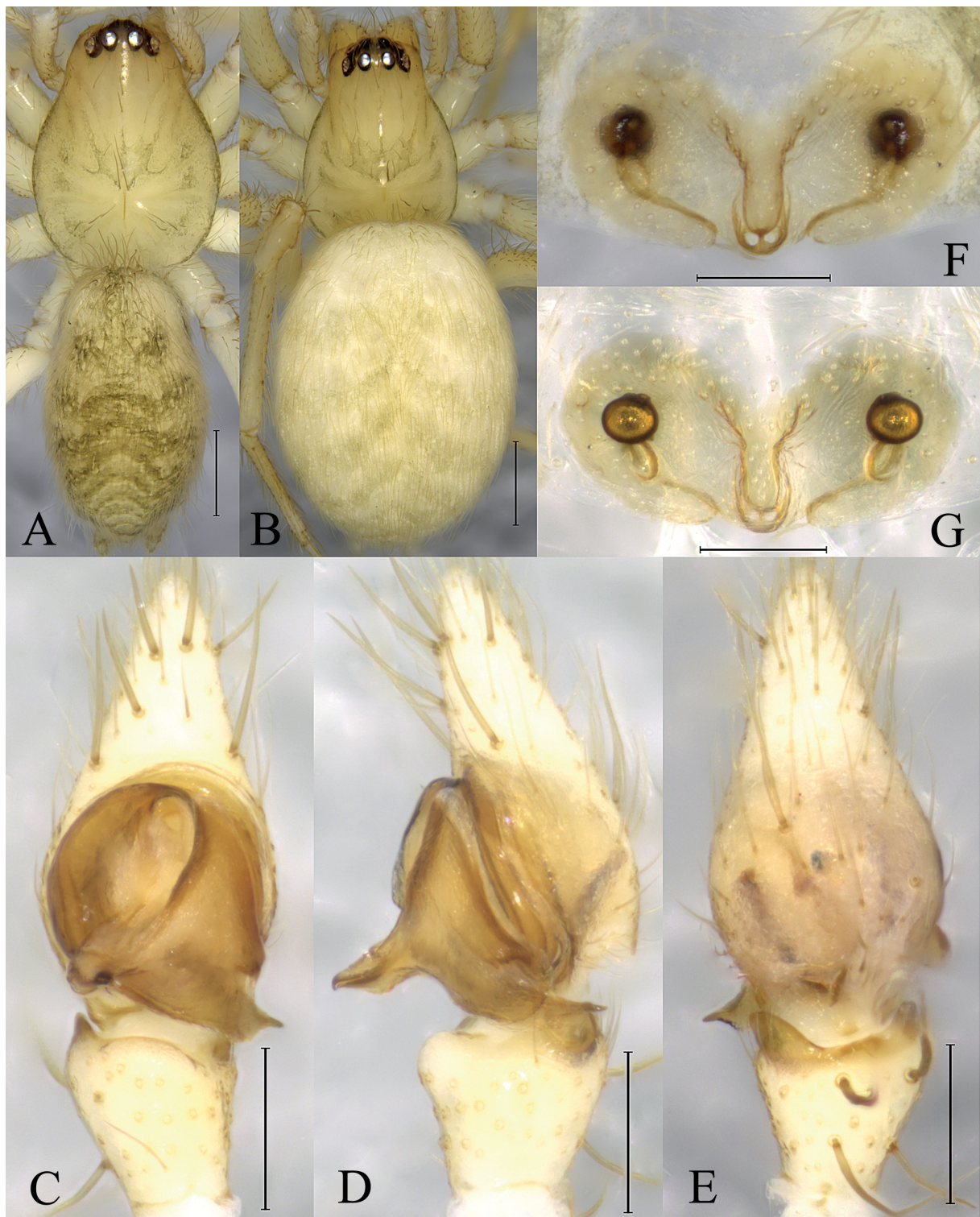


Fig. 5. *Devade mongolica* Esyunin & Marusik, 2001. **A, C–E.** Male (SWUC-DIDM-01). **B, F–G.** Female (SWUC-DIDM-02). **A.** Habitus, dorsal view. **B.** Habitus, dorsal view. **C.** Left male palp, ventral view. **D.** Same, retrolateral view. **E.** Same, dorsal view. **F.** Epigyne, ventral view. **G.** Vulva, dorsal view. Scale bars: A–B = 0.5 mm; C–G = 0.2 mm.

CARAPACE. Light with dark margins and dark radial stripes.

CHELICERAE. With 2 promarginal and 2 retromarginal teeth.

LEG MEASUREMENTS. I = 4.67 (1.33, 1.64, 1.02, 0.68); II = 4.46 (1.28, 1.51, 1.00, 0.67); III = 3.71 (1.13, 1.23, 0.91, 0.44); IV = 5.23 (1.47, 1.75, 1.34, 0.67).

ABDOMEN. Light colored, with transverse bands.

PALP (Figs 4A–C, 5C–E). Tibia short, almost as long as its distal width, less than half of cymbial length in retrolateral view. Retrolateral tibial apophysis tip directed almost ventrally in dorsal view. Cymbium 2 times as long as wide, tip as long as tibia; cymbial fold indistinct in dorsal view and easily seen in retrolateral view. Bulb about as long as wide; posterior arm of conductor (C) with two large processes: mesal process (MPA) short and hook-like; retrolateral process (RPA) wide and laminar, almost 3 times as long as mesal process. Embolus originating at about 12:00 o'clock position, distal part hidden by conductor.

Female (SWUC-DIDM-02, Fig. 5B)

MEASUREMENTS. Total length 3.02. Carapace 1.24 long, 0.93 wide; abdomen 1.93 long, 1.45 wide. Eye sizes and interdistances: AME 0.06, ALE 0.08, PME 0.07, PLE, 0.08; AME–AME 0.05, AME–ALE 0.01, PME–PME 0.07, PME–PLE 0.05, ALE–PLE 0.03. MOA 0.20 long, anterior width 0.18, posterior width 0.22. Clypeus height 0.07.

LEG MEASUREMENTS. I = 3.24 (0.99, 1.12, 0.67, 0.46); II = 3.10 (0.94, 1.04, 0.61, 0.51); III = 2.78 (0.80, 0.89, 0.63, 0.46); IV = 3.83 (0.99, 1.30, 1.01, 0.53).

CARAPACE AND ABDOMEN. Same morphological pattern as in male except lighter in color.

EPIGYNE (Figs 4D, 5F). Epigynal plate almost 2 times as wide as long, with anterior notch (No). Fovea V-shaped with distinct lateral margins, divided by septum. Septum reaching posterior margin, wider anteriorly.

VULVA (Figs 4E, 5G). Copulatory ducts extremely short. Spermathecae globular, separated by more than 3.5 times their diameters.

Distribution

China (Xinjiang) (Fig. 11), Mongolia.

***Devade pulla* sp. nov.**

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Figs 1, 6–7, 11

Chinese name

黑带蛛

Differential diagnosis

The new species resembles *D. longa* sp. nov. (Figs 2–3) in having a long tibia (longer than half the length of the cymbium), short septum (located in fovea), but differs by having the tibia shorter than the length of the cymbium (vs as long as cymbium), stronger and longer mesal process (as long as retrolateral process) (Figs 6A–C, 7C–E) (vs shorter than the length of the posterior arm, Figs 2A–C, 3C–E), and the copulatory openings located ectally from spermathecae (Figs 6D, 7F) (vs located mesally, Figs 2D, 3F).

Etymology

The specific epithet comes from the Latin adjective '*pullus*', meaning 'black' and refers to the body color of the male.

Type material

Holotype

CHINA • ♂; Xinjiang, Yuli Co., No. 218 Road, Km 772; 41°06'28" N, 86°30'39" E; elev. 868 m; 1 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-T-DI-21-01.

Paratypes (5 ♂♂, 4 ♀♀)

CHINA • 1 ♀; same data as for holotype; SWUC-T-DI-21-02 • 5 ♂♂, 3 ♀♀; Hutubi Co., Liuhao Reservoir; 44°17'14" N, 86°57'30" E; elev. 456 m; 21 May 2022; Y.S. Yang leg.; SWUC-T-DI-21-03 to SWUC-T-DI-21-10.

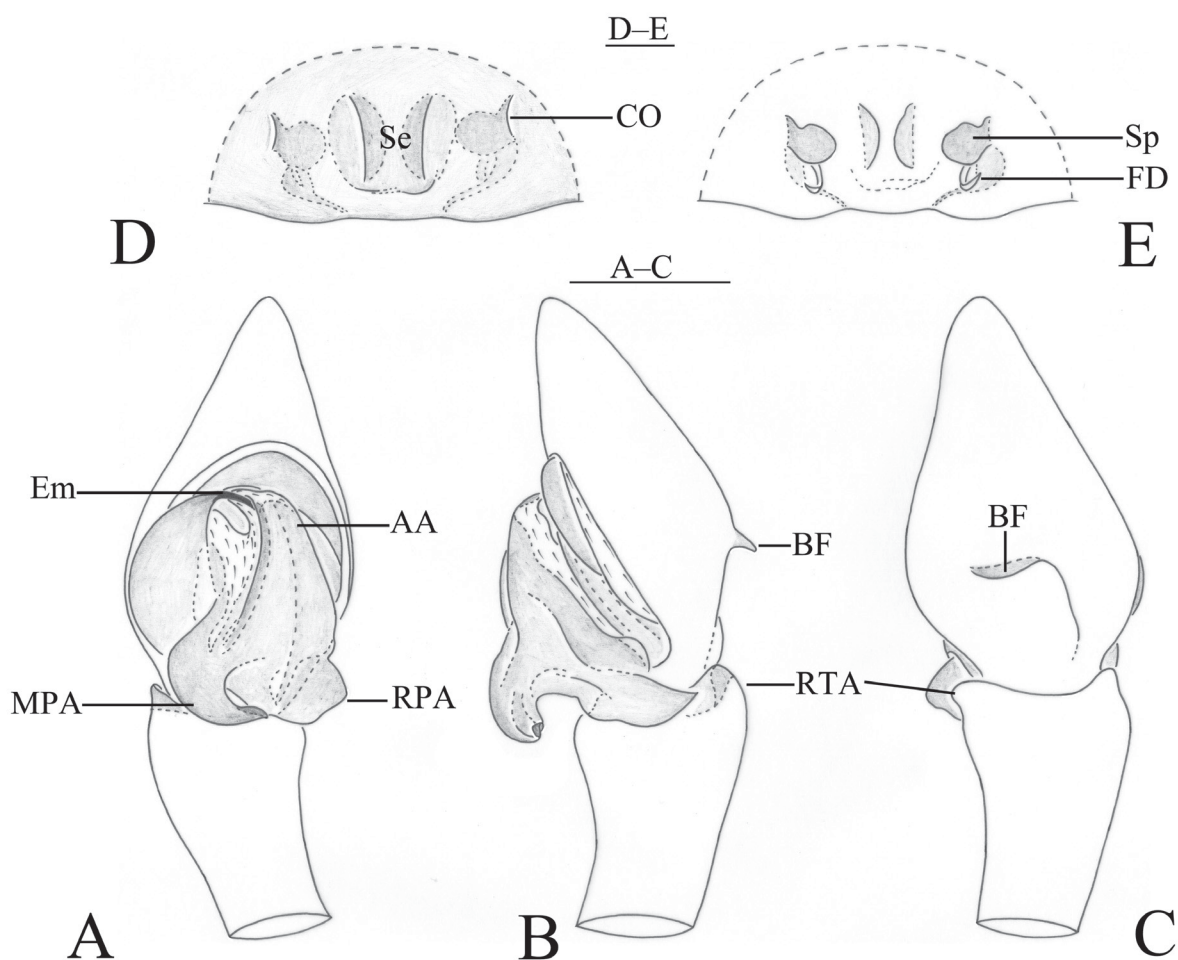


Fig. 6. *Devade pulla* sp. nov. **A–C.** Holotype, ♂ (SWUC-T-DI-21-01). **D–E.** Paratype, ♀ (SWUC-T-DI-21-02). **A.** Left palp, ventral view. **B.** Same, retrolateral view. **C.** Same, dorsal view. **D.** Epigyne, ventral view. **E.** Vulva, dorsal view. Abbreviations: AA = anterior arm of conductor; BF = basidorsal fold of cymbium; CO = copulatory opening; Em = embolus; FD = fertilization duct; MPA = mesal process of conductor posterior arm; RPA = retrolateral process of conductor posterior arm; RTA = retrolateral tibial apophysis; Se = septum; Sp = spermatheca. Scale bars = 0.2 mm.

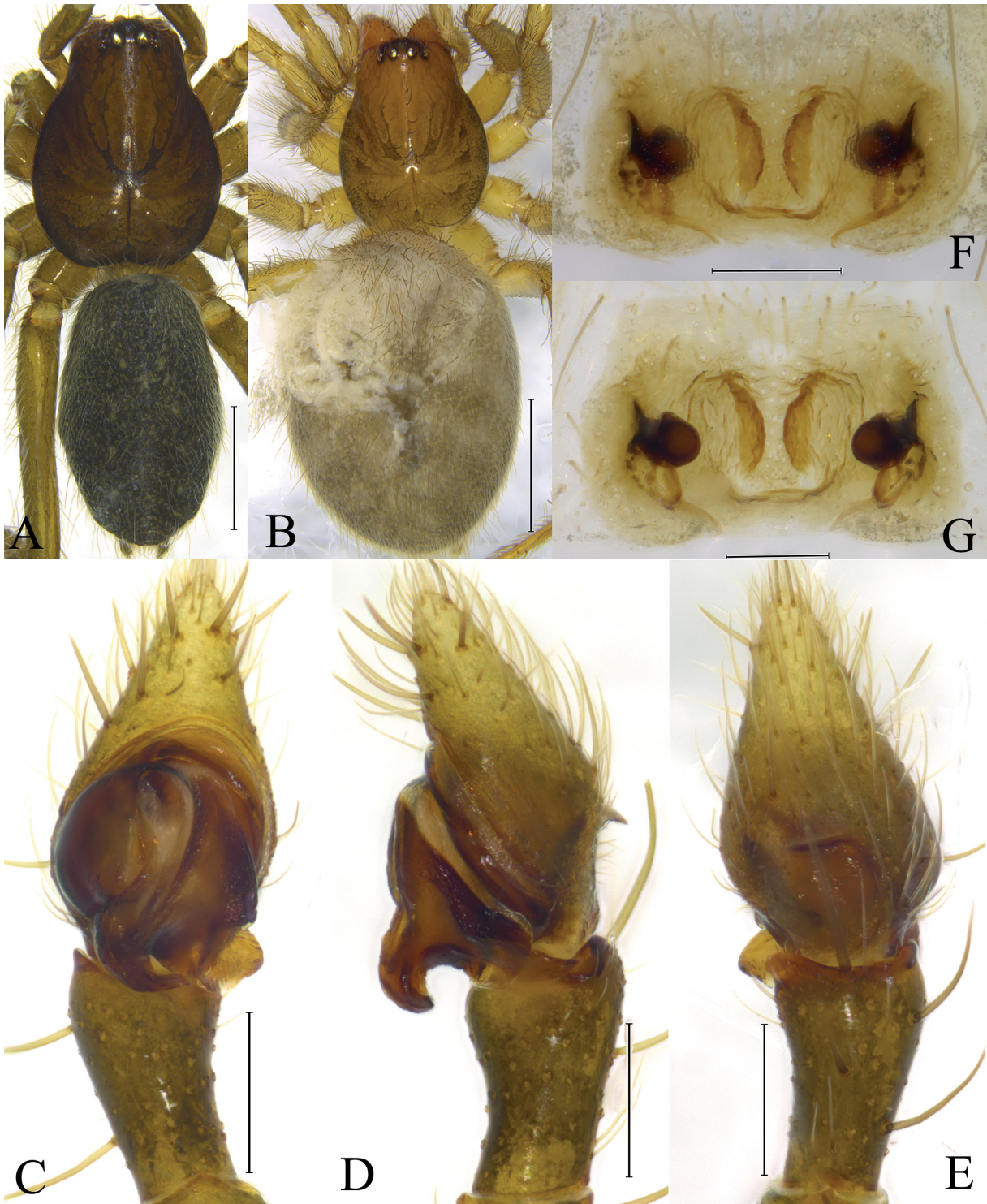


Fig. 7. *Devade pulla* sp. nov. **A, C–E.** Holotype, ♂ (SWUC-T-DI-21-01). **B, F–G.** Paratype, ♀ (SWUC-T-DI-21-02). **A.** Habitus, dorsal view. **B.** Habitus, dorsal view. **C.** Left palp, ventral view. **D.** Same, retrolateral view. **E.** Same, dorsal view. **F.** Epigyne, ventral view. **G.** Vulva, dorsal view. Scale bars: A = 1 mm; B = 2 mm; C–G = 0.2 mm.

Description

Male (holotype SWUC-T-DI-21-01, Fig. 7A)

MEASUREMENTS. Total length 4.28. Carapace 2.03 long, 1.56 wide; abdomen 2.22 long, 1.37 wide. Eye sizes and interdistances: AME 0.11, ALE 0.11, PME 0.11, PLE, 0.11; AME–AME 0.06, AME–ALE 0.02, PME–PME 0.10, PME–PLE 0.07, ALE–PLE 0.05. MOA 0.28 long, anterior width 0.25, posterior width 0.30. Clypeus height 0.11.

CARAPACE. Dark brown, with darker margins and dark radial stripes.

CHELICERAE. With 3 promarginal and 2 retromarginal teeth.

LEG MEASUREMENTS. I = 6.61 (1.86, 2.26, 1.47, 1.02); II = 6.37 (1.78, 2.12, 1.50, 0.97); III = 5.94 (1.64, 1.73, 1.61, 0.96); IV = 7.80 (2.11, 2.45, 2.16, 1.08).

ABDOMEN. Uniformly dark gray.

PALP (Figs 6A–C, 7C–E). Tibia short, about 2 times as long as wide, almost half of cymbium length. Retrolateral tibial apophysis (RTA) laminar and tip almost pointed ventrally in dorsal view. Cymbium 2 times as long as wide. Basidorsal fold (BF) forms right angle, finger-like in retrolateral view. Posterior arm of conductor with 2 large processes: mesal process (MPA) hook-like, tip slightly twisted; retrolateral process (RPA) wide and laminar, as long as mesal process. Embolus originating at about 11:30 o'clock position, distal part hidden by conductor.

Female (paratype SWUC-T-DI-21-02, Fig. 7B)

MEASUREMENTS. Total length 7.83. Carapace 2.95 long, 2.28 wide; abdomen 4.97 long, 3.66 wide. Eye sizes and interdistances: AME 0.11, ALE 0.13, PME 0.11, PLE, 0.12; AME–AME 0.07, AME–ALE 0.03, PME–PME 0.12, PME–PLE 0.08, ALE–PLE 0.05. MOA 0.31 long, anterior width 0.28, posterior width 0.34. Clypeus height 0.13.

CARAPACE. Light brown with darker margins and radial stripes.

LEG MEASUREMENTS. I = 7.04 (2.05, 2.42, 1.52, 1.05); II = 6.67 (1.93, 2.23, 1.49, 1.02); III = 6.15 (1.70, 1.94, 1.54, 0.97); IV = 8.12 (2.21, 2.74, 2.09, 1.08).

ABDOMEN. Uniformly gray-brown.

EPIGYNE (Figs 6D, 7F). Epigynal plate about 2 times as wide as long; fovea ca 1.3 times as wide as long; septum about $\frac{1}{3}$ of fovea width, almost 2 times as long as wide. Copulatory openings (CO) slit-shaped, separated by 2 times the length of septum.

VULVA (Figs 6E, 7G). Copulatory ducts indistinct, copulatory opening leads to spermathecae, located ectally. Spermathecae small and globular, separated by ca 2.5 times their diameters.

Distribution

China (Xinjiang) (Fig. 11).

Devade qiemuensis (Hu & Wu, 1989) stat. rev.
Figs 8–11

Amaurobius qiemuensis Hu & Wu, 1989: 57, fig. 40.1–8 (♀).

Amaurobius qiemuensis – Song *et al.* 1999: 365, fig. 216f–g (♀).

Devade qiemuensis – Esyunin & Efimik 2000: 685 (transferred from *Amaurobius*).

non *Devade tenella* (Tystshenko, 1965) – Esyunin & Marusik 2001: 130 (based on misidentification of Chinese specimen).

Chinese name

且末帶蛛

Differential diagnosis

This species resembles *D. longa* sp. nov. (Figs 2–3) in having a longer tibia (longer than half the length of the cymbium), the fingernail edge-shaped basidorsal fold (BF) of the cymbium and similar spermathecae, but it differs by having the palpal tibia shorter than the length of the cymbium (Figs 8A–C, 9C–E, 10C–E) (vs as long as the cymbium, Figs 2A–C, 3C–E), the anterior side of the mesal process of the conductor posterior arm with smooth tip (Figs 8B, 9D, 10D) (vs has a notch, Figs 2B, 3D), and the septum 3 times as long as wide (Figs 8D, 9F, 10F) (vs 2 times as long as wide Figs 2D, 3F).

Material examined

CHINA – **Hebei** • 2 ♀♀; Zhangjiakou City, Zhangbei Co., Zhongdu; 41°18'02" N, 114°44'39" E; elev. 1350 m; 16 Jul. 2002; G.M. Tang leg.; SWUC-DIDQ-01, SWUC-DIDQ-02. – **Inner Mongolia** • 3 ♀♀; Alxa League, Ejina Banner, Badaoqiao Desert Park; 42°02'25" N, 101°18'32" E; elev. 924 m; 5 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-03 to SWUC-DIDQ-05 • 1 ♀; Ejina Banner, Tian'e Lake; 42°00'40" N, 101°35'14" E; elev. 890 m; 5 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-06 • 1 ♂, 6 ♀♀; Ejina Banner, Juyan Lake; 42°20'16" N, 101°15'01" E; elev. 895 m; 5 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-07 to SWUC-DIDQ-13 • 7 ♂♂, 11 ♀♀; Alxa Left Banner, Jilantai Salt Lake; 39°43'16" N, 105°44'42" E; elev. 1017 m; 7 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-14 to SWUC-DIDQ-31 • 4 ♂♂, 7 ♀♀; Alxa Left Banner, Jilantai, Dongshawo; 39°44'23" N, 105°46'29" E; elev. 1024 m; 7 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-32 to SWUC-DIDQ-42 • 1 ♀; Jilantai; 39°44'31" N, 105°45'48" E; elev. 1027 m; 7 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-43 • 2 ♂♂, 11 ♀♀; Alxa Left Banner, Qinggele; 40°17'03" N, 105°51'12" E; elev. 1165 m; 11 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-44 to SWUC-DIDQ-56 • 5 ♀♀; Alxa Left Banner, Liutuan, Dongqing Lake; 40°30'17" N, 106°30'23" E; elev. 1030 m; 11 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-57 to SWUC-DIDQ-61 • 1 ♀; Bayannur, Nalin Lake; 40°31'34" N, 106°38'39" E; elev. 1038 m; 11 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-62 • 1 ♂, 8 ♀♀; Bayannur, Urad Front Banner, Wuliangsu Hai; 40°51'34" N, 108°50'54" E; elev. 1025 m; 14 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-63 to SWUC-DIDQ-71 • 1 ♀; Baotou City, Bailingmiao Town; 41°40'32" N, 110°27'37" E; elev. 1348 m; 17 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-72 • 6 ♂♂, 8 ♀♀; Chifeng City, Hexigten Banner, Dalinuoer; 43°22'51" N, 116°39'39" E; elev. 1221 m; 27 Jun. 2015; T. Lu and G.Q. Huang leg.; SWUC-DIDQ-73 to SWUC-DIDQ-86 • 1 ♂, 3 ♀♀; Dalinuoer; 3 Jul. 2002; Z.S. Zhang leg.; SWUC-DIDQ-87 to SWUC-DIDQ-90. – **Qinghai** • 7 ♀♀; Golmud, Xiao Qaidam Lake; 37°26'59" N, 95°30'40" E; elev. 3170 m; 24 Jul. 2018; L.Y. Wang, Z.S. Wu and Y.N. Mu leg.; SWUC-DIDQ-91 to SWUC-DIDQ-97. – **Xinjiang** • 13 ♂♂, 9 ♀♀; Altay City, Fuhai Co., Ulungur Lake; 47°14'32" N, 87°24'09" E; elev. 506 m; 15 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-DIDQ-98 to SWUC-DIDQ-119 • 2 ♂♂, 2 ♀♀; Bohu Co., Bosten Lake, Dahekou; 41°54'29" N, 86°44'16" E; elev. 1033 m; 12 May 2013; L.Y. Wang leg.; SWUC-DIDQ-120 to SWUC-DIDQ-123 • 1 ♂, 4 ♀♀; Korla, Yuli Co.; 40°43'56" N, 87°20'08" E; elev. 863 m; 1 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-DIDQ-124 to SWUC-DIDQ-128 • 24 ♂♂, 74 ♀♀; Ruoqiang Co., Taitema Lake; 39°30'14" N, 88°18'54" E; elev. 845 m; 1 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-DIDQ-129 to SWUC-DIDQ-226 • 11 ♂♂, 24 ♀♀; Taitema Lake; 10 May 2013; L.Y. Wang leg.; SWUC-DIDQ-227 to SWUC-DIDQ-261 • 1 ♂, 6 ♀♀; Ruoqiang Co., Washixia Township; 38°41'30" N, 86°53'14" E; elev. 1029 m; 10 May 2013; L.Y. Wang leg.; SWUC-DIDQ-262 to SWUC-DIDQ-268 • 1 ♂, 2 ♀♀; Qiemo Co.; 38°12'13" N, 85°31'08" E; elev. 1241 m; 11 May 2013; L.Y. Wang leg.; SWUC-

DIDQ-269 to SWUC-DIDQ-271 • 2 ♂♂, 12 ♀♀; Qiemo Co.; 37°57'47" N, 84°26'47" E; elev. 1260 m; 2 Jun. 2014; L.Y. Wang and X.K. Jiang leg.; SWUC-DIDQ-272 to SWUC-DIDQ-285.

Description

Male (SWUC-DIDQ-272, Fig. 9A)

MEASUREMENTS. Total length 4.27. Carapace 1.93 long, 1.47 wide; abdomen 2.46 long, 1.47 wide. Eye sizes and interdistances: AME 0.09, ALE 0.11, PME 0.09, PLE, 0.09; AME–AME 0.09, AME–ALE 0.03, PME–PME 0.10, PME–PLE 0.07, ALE–PLE 0.05. MOA 0.30 long, anterior width 0.26, posterior width 0.28. Clypeus height 0.10.

CARAPACE. Brown, cephalic part darker than thoracic part; with dark margins and dark radial stripes.

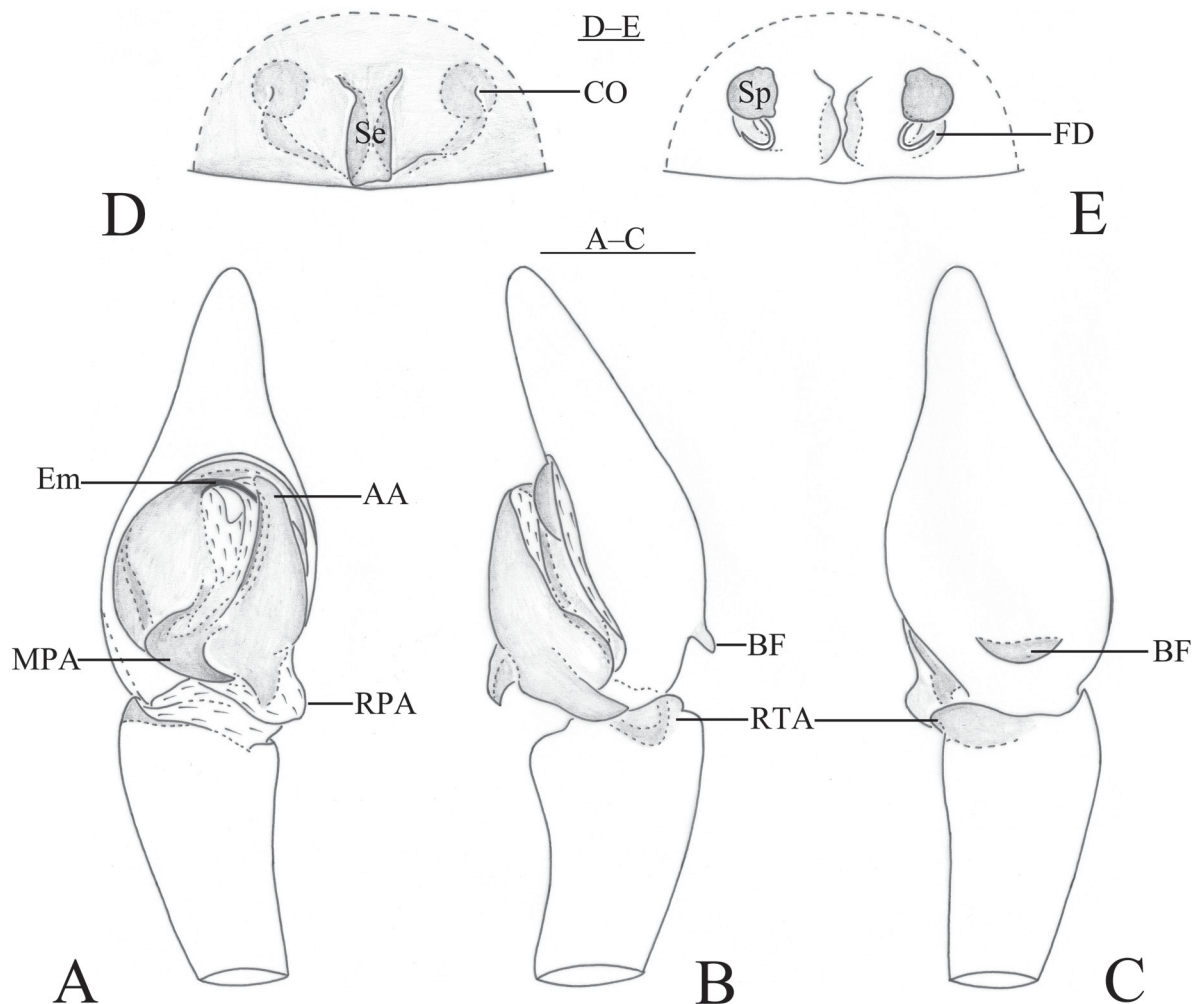


Fig. 8. *Devade qiemuensis* (Hu & Wu, 1989) stat. rev. from Xinjiang. **A–C.** Male (SWUC-DIDQ-272). **D–E.** Female (SWUC-DIDQ-274). **A.** Left palp, ventral view. **B.** Same, retrolateral view. **C.** Same, dorsal view. **D.** Epigyne, ventral view. **E.** Vulva, dorsal view. Abbreviations: AA = anterior arm of conductor; BF = basidorsal fold of cymbium; CO = copulatory opening; Em = embolus; FD = fertilization duct; MPA = mesal process of conductor posterior arm; RPA = retrolateral process of conductor posterior arm; RTA = retrolateral tibial apophysis; Se = septum; Sp = spermatheca. Scale bars = 0.2 mm.

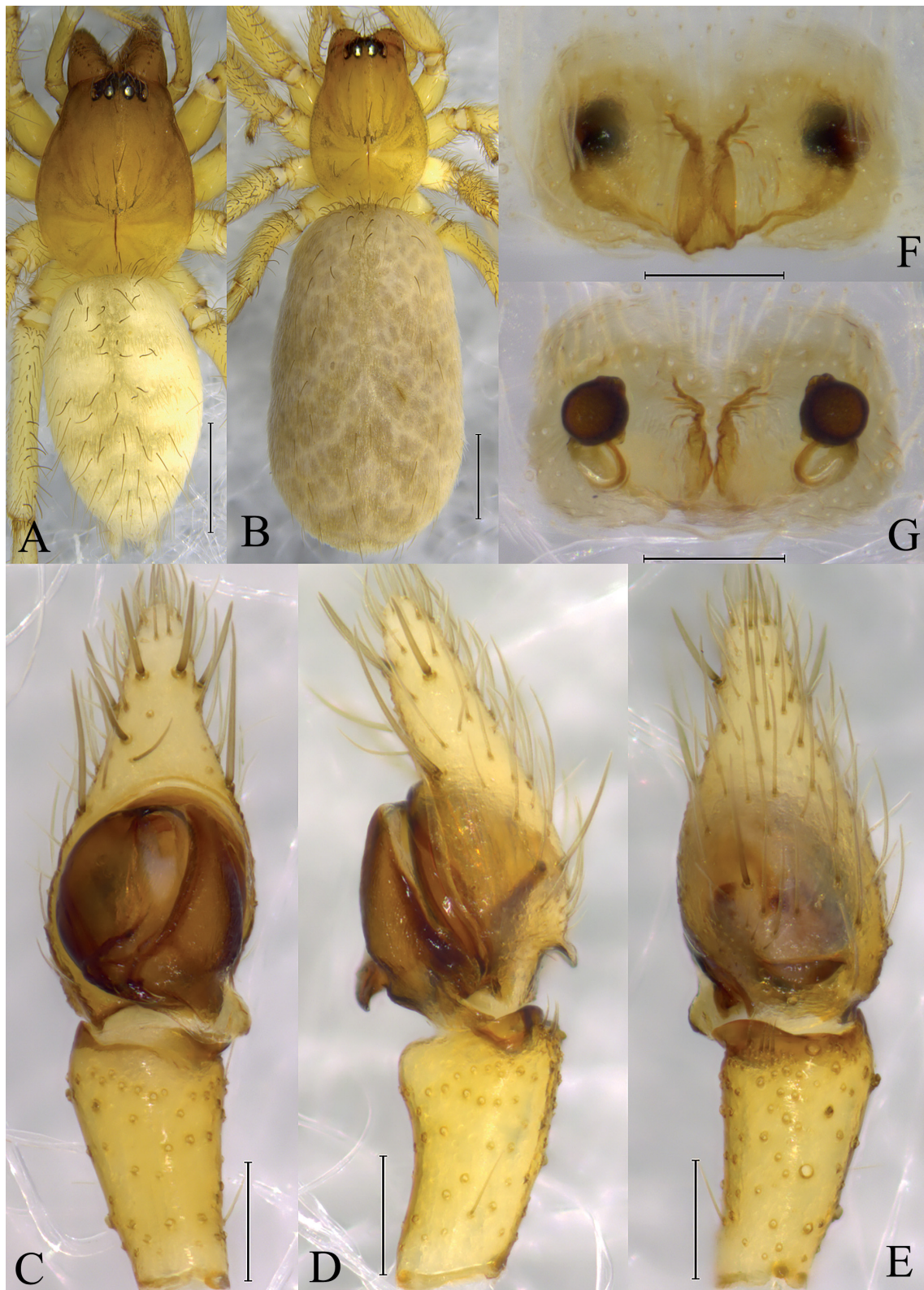


Fig. 9. *Devade qiemuensis* (Hu & Wu, 1989) stat. rev. from Xinjiang. **A, C–E.** Male (SWUC-DIDQ-272). **F–G.** Female (SWUC-DIDQ-274). **A.** Habitus, dorsal view. **B.** Habitus, dorsal view. **C.** Left palp, ventral view. **D.** Same, retrolateral view. **E.** Same, dorsal view. **F.** Epigyne, ventral view. **G.** Vulva, dorsal view. Scale bars: A–B = 1 mm; C–G = 0.2 mm.

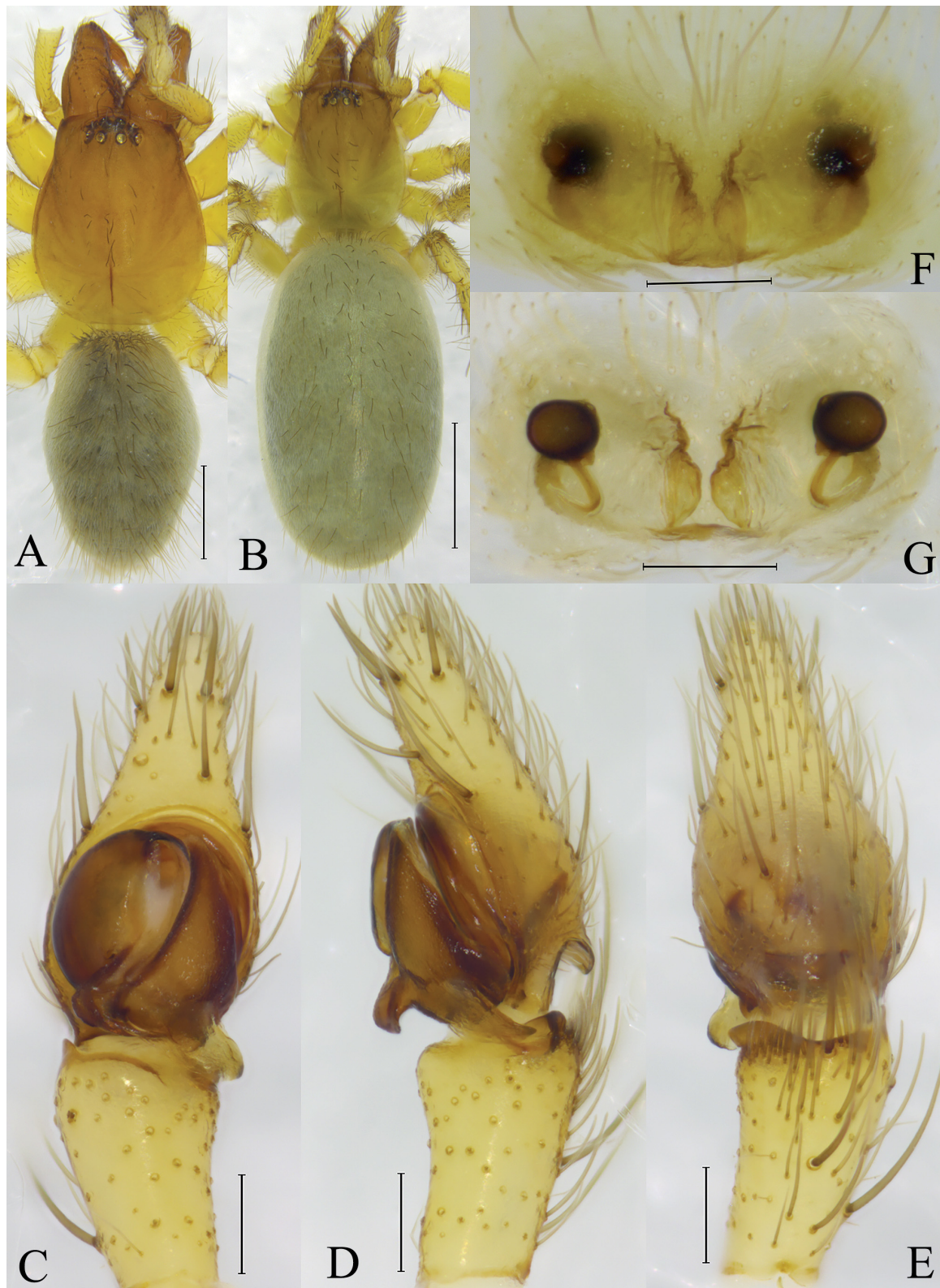


Fig. 10. *Devade qiemuensis* (Hu & Wu, 1989) stat. rev. from Inner Mongolia, **A, C–E.** Male (SWUC-DIDQ-73). **F–G.** Female (SWUC-DIDQ-79). **A.** Habitus, dorsal view. **B.** Habitus, dorsal view. **C.** Left palp, ventral view. **D.** Same, retrolateral view. **E.** Same, dorsal view. **F.** Epigyne, ventral view. **G.** Vulva, dorsal view. Scale bars: A = 1 mm; B = 2 mm; C–G = 0.2 mm.

CHELICERAE. With 3 promarginal and 2 retromarginal teeth.

LEG MEASUREMENTS. I = 6.14 (1.75, 2.05, 1.36, 0.98); II = 6.11 (1.70, 1.98, 1.45, 0.98); III = 6.09 (1.62, 1.85, 1.60, 1.02); IV = 7.67 (2.04, 2.41, 2.06, 1.16).

ABDOMEN. Light brown to gray with ca 7–8 dark transversal chevrons.

PALP (Figs 8A–C, 9C–E, 10C–E). Tibia long, longer than half the length of cymbium. Retrolateral tibial apophysis laminar and directed ventrally. Cymbium longer than wide, narrow towards tip, basidorsal fold (BF) rounded in dorsal view and fingernail edge-shaped in retrolateral view. Posterior arm of conductor with two large processes: mesal process narrow and hook-like, with pointed tip; retrolateral process wide and laminar, almost 2 times as long as mesal process. Embolus originating at about the 11:00 o'clock position.

Female (SWUC-DIDQ-274, Fig. 9B)

MEASUREMENTS. Total length 6.13. Carapace 2.01 long, 1.41 wide; abdomen 4.14 long, 2.34 wide. Eye sizes and interdistances: AME 0.10, ALE 0.13, PME 0.10, PLE, 0.11; AME–AME 0.08, AME–ALE 0.02, PME–PME 0.10, PME–PLE 0.06, ALE–PLE 0.04. MOA 0.28 long, anterior width 0.28, posterior width 0.30. Clypeus height 0.10.

LEG MEASUREMENTS. I = 5.59 (1.67, 1.89, 1.20, 0.83); II = 5.07 (1.36, 1.65, 1.18, 0.88); III = 4.98 (1.32, 1.46, 1.36, 0.86); IV = 6.59 (1.75, 2.12, 1.82, 0.90).

CARAPACE AND ABDOMEN. Same morphological pattern as in male except lighter in color.

EPIGYNE (Figs 8D, 9F, 10F). Epigynal plate almost 2 times as wide as long. Septum 3 times as long as wide. Copulatory openings small, separated by two times the length of the septum.

VULVA (Figs 8E, 9G, 10G). Copulatory ducts extremely short. Spermathecae small and globular, separated by 2.5 times their diameters.

Distribution

China (Hebei, Inner Mongolia, Qinghai, Xinjiang) (Fig. 11).

Remarks

We presented the photographs of specimens of *Devade qiemuensis* collected from Qiemo County (type locality) and Inner Mongolia. While variations were observed in the septum of the epigyne among the female specimens, no differences were noted in the male specimens collected alongside the females in Inner Mongolia.

Discussion

Species of *Devade* occur in salt marshes along lake and river shores, and may have a strong ability to resist high salinity. The species are morphologically very similar, making them difficult to separate from each other. Distinguishing males of the species is mainly related to the relative length of the palpal tibia and cymbium, as well as the shape and size of the mesal/retrolateral processes of the conductor posterior arm. The relative length of the cymbial tip also serves as a characteristic of different species. The main difference in females is the shape of the epigynal septum.

Esyunin & Marusik (2001) regarded *D. qiemuensis* (Hu & Wu, 1989) as a synonym of *D. tenella* (Tystshenko, 1965), without examination of *D. qiemuensis* from China. However, the palpal tibia of

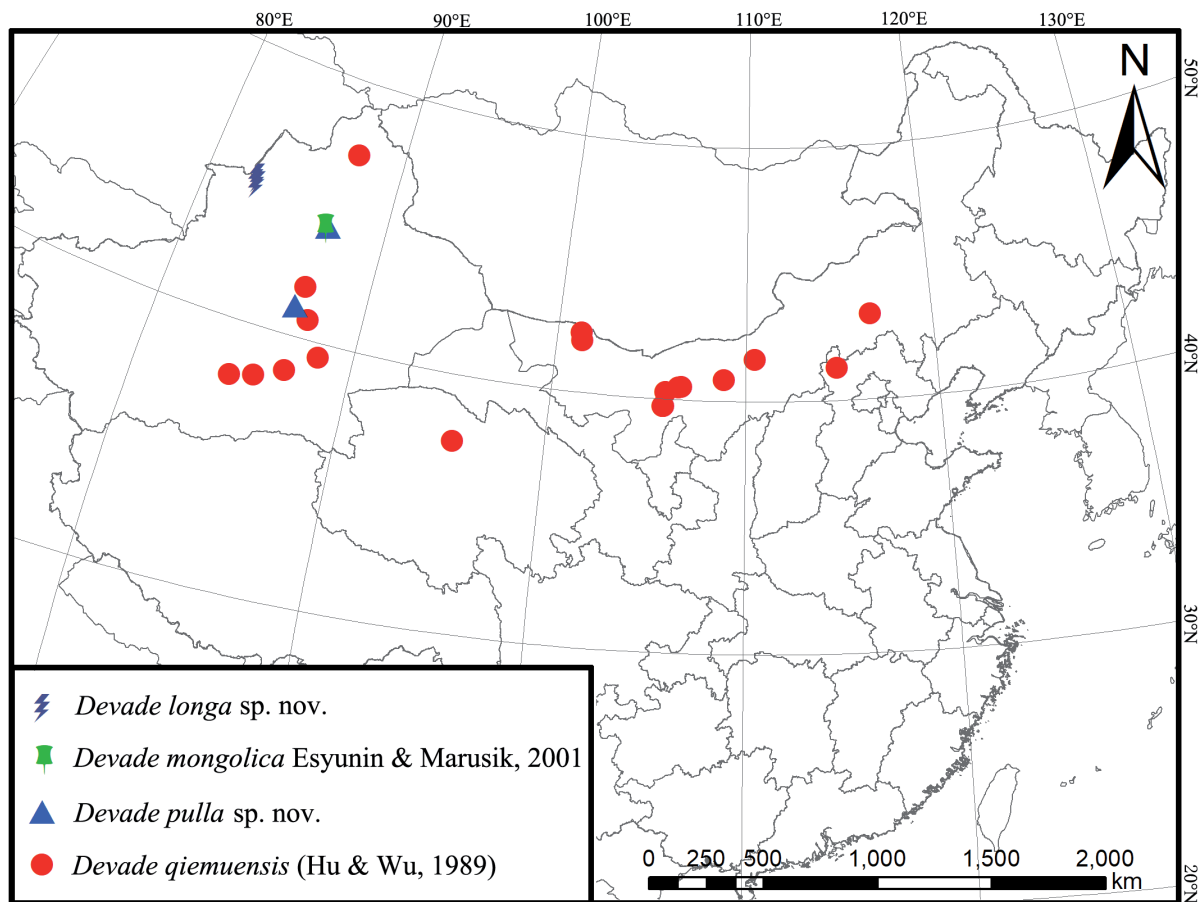


Fig. 11. Distribution of the species of genus *Devade* in China.

D. tenella is short, and the retrolateral process of the conductor posterior arm is triangular, which is significantly different from *D. qiemuensis*. Therefore, we revalidate the status of *D. qiemuensis* from the synonym of *D. tenella*.

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