## Research article

# Seven new species of Meta C.L. Koch, 1836 (Araneae, Tetragnathidae) from Southwest China 

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#### Abstract

Seven new species of the genus Meta C.L. Koch, 1836 from Southwest China are described   descriptions, photos of somatic features and copulatory organs as well as line drawings, comparisons with closely related species, and a distribution map are provided.


Keywords. Description, illustration, long-jawed orbweavers, taxonomy.
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## Introduction

Southwest China includes the provinces of Chongqing, Guizhou, Sichuan, Tibet and Yunnan, with a combined area of $2,365,700 \mathrm{~km}^{2}$, and elevations ranging from 645 to $>4000 \mathrm{~m}$, resulting in an impressive vertical natural landscape. From southeast Tibet to western Sichuan and northwest Yunnan, the mountains of southwest China are a biodiversity hotspot, with only a narrow range on the western slope of the Gaoligong Mountains, located in northern Myanmar (Cai et al. 2019).

The diversity of Tetragnathidae Menge, 1866 spiders in Southwest China is relatively high, with 81 species belonging to 14 genera (Dianleucauge Song \& Zhu, 1994, Diphya Nicolet, 1849, Dolichognatha O. Pickard-Cambridge, 1869, Dyschiriognatha Simon, 1893, Guizygiella Zhu, Kim \& Song, 1997, Leucauge White, 1841, Meta C.L. Koch, 1836, Metleucauge Levi, 1980, Okileucauge Tanikawa, 2001,

Orsinome Thorell, 1890, Pachygnatha Sundevall, 1823, Tetragnatha Latreille, 1804, Tylorida Simon, 1894, and Wolongia Zhu, Kim \& Song, 1997) (Li \& Lin 2016; Wang et al. 2020a, 2020b).

The spider genus Meta C.L. Koch currently comprises 26 species distributed across the world, including ten species from China (Li \& Lin 2016; Wang et al. 2020; World Spider Catalog 2022). Spiders of the genus Meta prefer shady woods and shallow caves, where they build horizontal webs and position themselves in the middle of the web to capture prey. While examining the specimens collected from Southwest China (including Guizhou, Sichuan and Tibet), seven new species of the genus Meta were recognized and are described here.

## Material and methods

All specimens were preserved in $75 \%$ ethanol and examined, illustrated, photographed and measured using a Leica M205A stereo microscope (Leica Microsystems Ltd made in Germany) equipped with a drawing tube, a Leica DFC450 camera and LAS software ver. 4.6 (Leica Microsystems Ltd made in Germany). Male palps and epigynes were examined and illustrated after being dissected. Female genitalia were cleared in $90 \%$ lactic acid. 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 millimeters. Specimens are deposited in the School of Life Sciences, Southwest University, Chongqing, China (SWUC). The terminology used in the text and figure legends follows ÁlvarezPadilla \& Hormiga (2011).

## Abbreviations

ALE $=$ anterior lateral eye
$\mathrm{AME}=$ anterior median eye
$\mathrm{CD}=$ copulatory duct
CEP = cymbial ectobasal process
Co = conductor
$\mathrm{Em}=$ embolus
$\mathrm{FD}=$ fertilization duct
MEA $=$ metaine embolic apophysis
$\mathrm{MOA}=$ median ocular area
$\mathrm{Pa}=$ paracymbium
PLE = posterior lateral eye
PME $=$ posterior median eye
$\mathrm{Sp}=$ spermathecae

## Results

## Taxonomy

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Tetragnathidae Menge, 1866
Genus Meta C.L. Koch, 1836

# Meta bowo sp. nov. <br> urn:lsid:zoobank.org:act:791783C1-74A5-4987-AC31-4A0C3BEDB30F 

Figs 1A-B, 2-4, 22

## Differential diagnosis

This new species resembles M. yani Wang, Zhou, Irfan, Yang \& Peng, 2020 (Wang et al. 2020a: figs 1ef, 10a-d, 11a-b, 12a-e) in having the similar conductor of male palp and the similar oval outline of female epigynal plate, but can be distinguished by the following characters: cymbial ectobasal process oval with a depression on distal margin in ventral view, a small tooth medially in retrolateral view in M. bowo sp. nov. (Figs 2B-C, 3B-D), whereas Y-shaped, with a small tooth laterally in retrolateral view in M. yani (Wang et al. 2020a: figs 10b-c, 12b); lower outgrowth of metaine embolic apophysis thumb-shaped with blunt end in ventral view in M. bowo sp. nov. (Fig. 3E), whereas narrow with sharp pointed end in M. yani (Wang et al. 2020a: figs 10c, 12b); spermathecae kidney-shaped in M. bowo sp. nov. (Figs 2D-E, 4B), boxing glove-shaped in M. yani (Wang et al. 2020a: figs 11b, 12e); a pair of conspicuous sclerotized corners in M. bowo sp. nov. (Fig. 4A) whereas smooth, rounded margin posteriorly in M. yani (Wang et al. 2020a: fig 11a).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • उ'; Tibet, Bowo County, $29^{\circ} 52^{\prime} 11.10^{\prime \prime} \mathrm{N}, 95^{\circ} 45^{\prime} 22.67^{\prime \prime} \mathrm{E}$; alt. 2720 m ; 15 Jul. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-02-01.

## Paratypes

 data as for preceding; SWUC-T-TEg-02-06-08 • $2 \delta^{3}$; Bowo County, Gu Township, Gu Village; $29^{\circ} 54^{\prime} 38.58^{\prime \prime} \mathrm{N}, 95^{\circ} 27^{\prime} 47.94^{\prime \prime}$ E; alt. 2597 m ; 16 Jul. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-02-09-10 • 1 đ̋; Bowo County; 2952'20.17" N, $95^{\circ} 45^{\prime} 18.29^{\prime \prime}$ E; alt. $2719 \mathrm{~m} ; 16$ Jul. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-02-11 • 2 ở ${ }^{3}$; Bowo County; $29^{\circ} 52^{\prime} 7.60^{\prime \prime} \mathrm{N}, 95^{\circ} 45^{\prime} 19.06^{\prime \prime}$ E; alt. 2700 m ; 8 Aug. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-02-12-13•1 $\%$; same collection data as for preceding; SWUC-T-TEg-02-14•1 ठ'; Bowo County; $29^{\circ} 51.956^{\prime}$ N, $95^{\circ} 45.381^{\prime}$ E; alt. 2810 m; 18 May 2019; L.Y. Wang, T. Yuan, P. Liu and H. Wang leg.; SWUC-T-TEg-02-15.

## Description

Male (holotype, Fig. 1A)
Measurements. Total length 4.94. Prosoma 2.47 long, 1.91 wide; opisthosoma 2.55 long, 1.87 wide. Eye sizes and interdistances: AME 0.15, ALE 0.18, PME 0.16, PLE 0.16; AME-AME 0.10, AME-


Fig. 1. A. Meta bowo sp. nov., ${ }^{\lambda}$, holotype (SWUC-T-TEg-02-01), habitus, dorsal view. B. Meta bowo sp. nov., + , paratype (SWUC-T-TEg-02-06), habitus, dorsal view. C. Meta cona sp. nov., $\widehat{O}^{\lambda}$, holotype (SWUC-T-TEg-03-01), habitus, dorsal view. D. Meta cona sp. nov.,, , paratype (SWUC-T-TEg-03-02), habitus, dorsal view. E. Meta gyirong sp. nov., ${ }^{\text {oै, }}$, holotype (SWUC-T-TEg-04-01), habitus, dorsal view. F. Meta hongyuan sp. nov., ${ }^{3}$, holotype (SWUC-T-TEg-05-01), habitus, dorsal view. G. Meta hongyuan sp. nov., $q$, paratype (SWUC-T-TEg-05-03), habitus, dorsal view. H. Meta tibet sp. nov., ${ }^{\lambda}$, holotype (SWUC-T-TEg-06-01), habitus, dorsal view. I. Meta tibet sp. nov., $\mathcal{\text { , } , ~ p a r a t y p e ~ ( S W U C - T - T E g - 0 6 - 0 5 ) , ~}$ habitus, dorsal view. J. Meta wanglang sp. nov., đ̂, holotype (SWUC-T-TEg-07-01), habitus, dorsal view. K. Meta wanglang sp. nov., ㅇ, paratype (SWUC-T-TEg-07-03), habitus, dorsal view. L. Meta weining sp. nov., ${ }^{2}$, holotype (SWUC-T-TEg-08-01), habitus, dorsal view. M. Meta weining sp. nov., ㅇ, paratype (SWUC-T-TEg-08-03), habitus, dorsal view.

ALE 0.13, PME-PME 0.10, PME-PLE 0.16, ALE-PLE 0.02. MOA 0.41 long, front width 0.37 , back width 0.45 . Clypeus height 0.13 .

Chelicerae. Strong, with three promarginal and four retromarginal teeth.
Leg measurements. $\mathrm{I}=12.96(3.45,4.53,3.56,1.42) ; \mathrm{II}=9.90(2.81,3.38,2.50,1.21) ; \mathrm{III}=5.29(1.67$, $1.61,1.28,0.73) ; \mathrm{IV}=7.12(2.36,2.19,1.86,0.71)$. Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter white, with black markings.
Palp (Figs 2A-C, 3A-E). Cymbial ectobasal process simple, oval, with a deep depression on distal end and a sharp conspicuous tooth in retrolateral view. Paracymbium finger-like, widest medially, with sparse long hairs. Metaine embolic apophysis longer than wide, bifurcated, extending forward; lower outgrowth thumb-shaped with blunt end.

Embolus. Short, abruptly thin with very fine tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, longer than wide, with membranous end.

Female (paratype SWUC-T-TEg-02-06, Fig. 1B)
Measurements. Total length 8.82. Prosoma 3.09 long, 2.45 wide; opisthosoma 5.72 long, 4.95 wide. Eye sizes and interdistances: AME 0.22, ALE 0.23, PME 0.20, PLE 0.21 ; AME-AME 0.10, AME-


Fig. 2. Meta bowo sp. nov. A-C. ふ, holotype (SWUC-T-TEg-02-01). D-E. $q$, paratype (SWUC-T-TEg-02-06). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view.


Fig. 3. Meta bowo sp. nov. A-D. ふ, holotype (SWUC-T-TEg-02-01). E. ふ , paratype (SWUC-T-TEg-02-02). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view. E. Embolus and metaine embolic apophysis, dorsal view.

ALE 0.18, PME-PME 0.10, PME-PLE 0.22, ALE-PLE 0.03. MOA 0.53 long, front width 0.54 , back width 0.56 . Clypeus height 0.33 .

Leg measurements. $\mathrm{I}=13.94(3.88,4.88,3.55,1.63) ; \mathrm{II}=11.17$ (3.29, 3.85, 2.68, 1.35); $\mathrm{III}=6.47$ (2.00, $2.16,1.54,0.77) ; \mathrm{IV}=8.72(2.97,2.94,1.95,0.86)$. Leg formula: 1243. Other morphological characteristics same as in male except opisthosoma light brownish with black markings.


Fig. 4. Meta bowo sp. nov., + , paratype (SWUC-T-TEg-02-06). A. Epigyne, ventral view. B. Vulva, dorsal view.

Epigyne (Figs 2D-E, 4A-B). Posterior margin of epigynal plate wave-like, posterior margin corners sclerotized with a pair of small protrusions.

Vulva (Figs 2D-E, 4A-B). Spermathecae kidney-shaped. Fertilization ducts thick, S-shaped.

## Distribution

China, Tibet (Bowo) (Fig. 22).

Meta cona sp. nov. urn:1sid:zoobank.org:act:394D796E-0044-4A4F-BF30-2341E2F5F36C

Figs 1C-D, 5-7, 22

## Differential diagnosis

The male of this new species resembles $M$. bowo sp. nov. (Figs 1-4) in having the similar conductor, paracymbium and the abruptly thin embolus of male palp, but can be distinguished by the following characters: metaine embolic apophysis relatively globular, lower outgrowth narrow with pointed end in ventral view in $M$. cona sp. nov. (Figs 5B, 6E), whereas longer than wide, lower outgrowth thumbshaped with blunt end in M. bowo (Figs 2B, 3E); cymbial ectobasal process robust with a sharp tooth at


Fig. 5. Meta cona sp. nov. A-C. $\widehat{\text { O }}$, holotype (SWUC-T-TEg-03-01). D-E. $\uparrow$, paratype (SWUC-T-TEg-03-02). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view. A-B. Red arrow indicating the lower outgrowth of metaine embolic apophysis.


Fig. 6. Meta cona sp. nov., $\widehat{0}$, holotype (SWUC-T-TEg-03-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view. E. Right palp, Embolus and metaine embolic apophysis, dorsal view. A, C. White arrow indicating the lower outgrowth of metaine embolic apophysis.
distal end visible in ventral view in $M$. cona sp. nov. (Figs 5B-C, 6B-D), whereas oval with a depression on distal margin, tooth invisible in ventral view in M. bowo (Figs 2B-C, 3B-D). The female of M. cona sp. nov. can be distinguished from all other congeners by the epigynal plate arc-shaped, relatively protruding posteriorly and spermathecae looks like beas on the string (Figs 5D-E, 7A-B).


Fig. 7. Meta cona sp. nov., $\uparrow$, paratype (SWUC-T-TEg-03-02). A. Epigyne, ventral view. B. Vulva, dorsal view.

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • $\widehat{J}^{\top}$; Tibet, Cona County, Mama Township, Lebugou; $27^{\circ} 52^{\prime} 51.24^{\prime \prime} \mathrm{N}, 91^{\circ} 47^{\prime} 33.85^{\prime \prime} \mathrm{E}$; alt. 2780 m; 4 Aug. 2020; L.Y. Wang, T. Yuan and Y.M. Hou leg.; SWUC-T-TEg-03-01.

## Paratypes

CHINA • 1 q; same collection data as for holotype; SWUC-T-TEg-03-02 • 1 q; Cona County, Mama Township, Lebugou; $27^{\circ} 53^{\prime} 54.98^{\prime \prime}$ N, $91^{\circ} 48^{\prime} 2.01^{\prime \prime}$ E; alt. 3008 m; 4 Aug. 2020; L.Y. Wang, T. Yuan and Y.M. Hou leg.; SWUC-T-TEg-03-02.

## Description

## Male (holotype, Fig. 1C)

Measurements. Total length 7.89. Prosoma 3.74 long, 3.00 wide; opisthosoma 4.30 long, 3.03 wide. Eye sizes and interdistances: AME 0.22, ALE 0.21, PME 0.23, PLE 0.20; AME-AME 0.22, AMEALE 0.25 , PME-PME 0.17 , PME-PLE 0.31 , ALE-PLE 0.05 . MOA 0.57 long, front width 0.58 , back width 0.60 . Clypeus height 0.22 .

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
Leg measurements. $\mathrm{I}=20.25(5.54,7.04,5.57,2.10) ; \mathrm{II}=15.52(4.47,5.34,4.05,1.66) ; \mathrm{III}=8.76$ (2.74, $2.71,2.21,1.10) ; \mathrm{IV}=12.13$ (3.85, 3.93, 2.82, 1.53). Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter white, with black markings.
Palp (Figs 5A-C, 6A-E). Cymbial ectobasal process simple, distal end protruding with a sharp tooth. Paracymbium finger-like, widest medially, with sparse long hairs. Metaine embolic apophysis sclerotized, globular, lower outgrowth narrow with pointed end, extending forward (shown with black arrow, Figs 5A-C, 6A-E).

Embolus. Short, abruptly thin with very fine tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, longer than wide, with membranous end.

Female (paratype SWUC-T-TEg-03-02, Fig. 1D)
Measurements. Total length 7.87. Prosoma 3.67 long, 2.83 wide; opisthosoma 4.53 long, 3.99 wide. Eye sizes and interdistances: AME 0.19, ALE 0.21, PME 0.22, PLE 0.21 ; AME-AME 0.23 , AMEALE 0.30, PME-PME 0.20, PME-PLE 0.31, ALE-PLE 0.08. MOA 0.68 long, front width 0.55 , back width 0.61 . Clypeus height 0.32 .

Leg measurements. $\mathrm{I}=16.24(4.53,5.76,3.90,2.05) ; \mathrm{II}=13.03(3.69,4.61,3.18,1.55) ; \mathrm{III}=7.68(2.28$, $2.53,1.73,1.14)$; $\mathrm{IV}=10.25(3.09,3.34,2.64,1.18)$. Leg formula: 1243. Other morphological characteristics same as in male.

Epigyne (Figs 5D-E, 7A-B). Posterior margin of epigynal plate arc-shaped, protruding posteriorly.
Vulva. Spermathecae looks like beas on the string. Fertilization ducts thick, S-shaped.

## Distribution

China, Tibet (Cona) (Fig. 22).

Meta gyirong sp. nov.
urn:1sid:zoobank.org:act:691650B9-4877-4EA6-803C-EADB85A03913
Figs 1E, 8-9, 22

## Differential diagnosis

M. gyirong sp. nov. can be distinguished from all other congeners by the metaine embolic apophysis tongue-shaped with blunt end; cymbial ectobasal process L-shaped with a ramous about two times longer than tibia, gradually narrow towards distal end with pointed tip and a sharp tooth (Figs 8A-C, 9A-D).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • ${ }^{\top}$; Tibet, Gyirong County, Gyirong Town, Riwubanba; $28^{\circ} 28^{\prime} 33.55^{\prime \prime} \mathrm{N}, 85^{\circ} 13^{\prime} 35.65^{\prime \prime} \mathrm{E}$; alt. 3089 m; 30 Jul. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-04-01.


Fig. 8. Meta gyirong sp. nov., ${ }^{\imath}$, holotype (SWUC-T-TEg-04-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view.


Fig. 9. Meta gyirong sp. nov., ${ }^{\lambda}$, holotype (SWUC-T-TEg-04-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view.

## Paratypes

 Gyirong Town, Riwubanba; $28^{\circ} 28^{\prime} 33.55^{\prime \prime} \mathrm{N}, 5^{\circ} 13^{\prime} 35.65^{\prime \prime}$ E; alt. 3089 m ; 15 Jul. 2018; L.Y. Wang, Z.S. Wu and Y.N. Mu leg.; SWUC-T-TEg-04-04-06 • 1 § ; Gyirong County, Gyirong Town, Longmu; $28^{\circ} 28.836^{\prime}$ N, $85^{\circ} 13.489^{\prime}$ E; alt. 3074 m; 17 Jul. 2018; L.Y. Wang, Z.S. Wu and Y.N. Mu leg.; SWUC-T-TEg-04-07.

## Description

Male (holotype, Fig. 1E)
Measurements. Total length 7.37. Prosoma 3.44 long, 2.67 wide; opisthosoma 4.39 long, 2.62 wide. Eye sizes and interdistances: AME 0.20, ALE 0.21, PME 0.20, PLE 0.20 ; AME-AME 0.14 , AMEALE 0.22 , PME-PME 0.14 , PME-PLE 0.27 , ALE-PLE 0.03 . MOA 0.51 long, front width 0.53 , back width 0.55 . Clypeus height 0.21 .

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
Leg measurements. $\mathrm{I}=27.24(7.28,9.50,8.14,2.32) ; \mathrm{II}=19.08(5.59,6.83,5.04,1.62) ; \mathrm{III}=10.04$ (3.25, $3.20,2.53,1.06) ; \mathrm{IV}=13.31$ (4.30, 4.29, 3.54, 1.18). Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter yellowish brown, with black markings.

Palp (Figs 8A-C, 9A-D). Cymbial ectobasal process simple, two times longer than tibia narrow towards distal end, with sharp tooth. Paracymbium finger-like, widest medially, with sparse long hairs. Metaine embolic apophysis sclerotized, longer than wide, slightly curved, extending forward.

Embolus. Long, arc-shaped with fine tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, sword-shaped in ventral view.

## Female

Unknown.

## Distribution

China, Tibet (Gyirong) (Fig. 22).

Meta hongyuan sp. nov. urn:lsid:zoobank.org:act: 58FF42FD-1DF9-4525-9325-403E3809F8B7

Figs 1F-G, 10-12, 22

## Differential diagnosis

The male of this new species resembles $M$. bowo sp. nov. (Figs 2-4) in having the similar bifurcate metaine embolic apophysis and paracymbium of male palp, but can be distinguished by the following characters: cymbial ectobasal process U-shaped with a sharp pointed tip in ventral view and lacking a tooth-like process in M. hongyuan sp. nov. (Figs 10B-C, 11B-D), whereas oval with a tooth-like process and a depression on distal margin in M. bowo (Figs 2B-C, 3B-D); embolus long, arc-shaped and gradually narrowing towards tip in $M$. hongyuan sp. nov. (Figs 10A, 11A), whereas short and abruptly thin in M. bowo (Figs 2A, 3A, E). The female of M. hongyuan sp. nov. can be distinguished from all other congeners by the epigynal plate posteriorly with a distinct sclerotized depression and spermathecae brain-shaped (Figs 10D-E, 12A-B).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • ${ }^{\lambda}$; Sichuan Province, Hongyuan County, Shuajingsi Town, Shuamalukou; 31² ${ }^{\circ} 7^{\prime} 41.23^{\prime \prime}$ N, $102^{\circ} 38^{\prime} 12.03^{\prime \prime}$ E; alt. 3189 m; 13 Oct. 2020; L.Y. Wang, Y. Zhang, J.X. Zhao and J.S. Luo leg.; SWUC-T-TEg-05-01.

## Paratypes

 as for preceding; SWUC-T-TEg-05-03-04.

## Description

## Male (holotype, Fig. 1F)

Measurements. Total length 5.03. Prosoma 2.46 long, 1.93 wide, opisthosoma 2.82 long, 2.28 wide. Eye sizes and interdistances: AME 0.17, ALE 0.18, PME 0.17, PLE 0.18 ; AME-AME 0.10 , AMEALE 0.13 , PME-PME 0.10, PME-PLE 0.16, ALE-PLE 0.03. MOA 0.45 long, front width 0.40 , back width 0.45 . Clypeus height 0.18 .


Fig. 10. Meta hongyuan sp. nov. A-C. $\circlearrowleft^{\lambda}$, holotype (SWUC-T-TEg-05-01). D-E. , , paratype (SWUC-T-TEg-05-03). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view.


Fig. 11. Meta hongyuan sp. nov., $\widehat{\text { on }}$, holotype (SWUC-T-TEg-05-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view.


Fig. 12. Meta hongyuan sp. nov., $\uparrow$, paratype (SWUC-T-TEg-05-03). A. Epigyne, ventral view. B. Vulva, dorsal view.

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
Leg measurements. $\mathrm{I}=12.18(3.26,4.22,3.34,1.36) ; \mathrm{II}=9.32(2.56,3.37,2.36,1.03) ; \mathrm{III}=5.31(1.70$, $1.61,1.26,0.74) ; \mathrm{IV}=6.97$ (2.26, 2.20, 1.69, 0.82). Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter white, with black markings.
Palp (Figs 10A-C, 11A-D). Cymbial ectobasal process simple, U-shaped with pointed end. Paracymbium finger-like, narrow towards tip, with sparse long hairs. Metaine embolic apophysis distal end broad, bifurcated, extending forward.

Embolus. Long, arc-shaped, with curved tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, longer than wide, with membranous end.

Female (paratype SWUC-T-TEg-05-03, Fig. 1G)
Measurements. Total length 6.17. Prosoma 2.39 long, 2.06 wide; opisthosoma 4.24 long, 3.85 wide. Eye sizes and interdistances: AME 0.17 , ALE 0.18 , PME 0.16 , PLE 0.17 ; AME-AME 0.13 , AMEALE 0.16, PME-PME 0.12, PME-PLE 0.20, ALE-PLE 0.04. MOA 0.46 long, front width 0.44 , back width 0.48 . Clypeus height 0.23 .

LeG MEASUREMENTS. $\mathrm{I}=8.91(2.46,2.89,2.40,1.16) ; \mathrm{II}=7.43(2.21,2.53,1.81,0.88) ; \mathrm{III}=4.67(1.50,1.52$, $1.00,0.65) ; \mathrm{IV}=6.37(2.04,2.11,1.52,0.70)$. Leg formula: 1243. Other morphological characteristics same as in male.

Epigyne (Figs 10D-E, 12A-B). Posterior margin of epigynal plate with distinct sclerotized depression.
Vulva. Spermathecae brain-shaped. Fertilization ducts thick, S-shaped.

## Distribution

China, Sichuan (Hongyuan) (Fig. 22).

Meta tibet sp. nov. urn:lsid:zoobank.org:act:BD6EDAAA-FAF4-4420-990A-6F7BA3B68EFD

Figs 1H-I, 13-15, 22

## Differential diagnosis

The male of this new species resembles $M$. bowo sp. nov. (Figs 2-4) and M. cona sp. nov. (Figs 5-7), in having the similar abruptly thin embolus and conductor of male palp, but can be distinguished from both species by the following characters: cymbial ectobasal process V-shaped and distal end of metaine embolic apophysis oval in M. tibet sp. nov. (Figs 13B-C, 14B-D). The female of M. tibet sp. nov. can be distinguished from all other congeners by the spermathecae globular, situated anteriorly (Figs 13D-E, $15 \mathrm{~A}-\mathrm{B}$ ).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • ${ }^{\widehat{\prime}}$; Tibet, Gyirong County, Gyirong Town, near Kaire waterfall; $28^{\circ} 29^{\prime} 2.68^{\prime \prime} \mathrm{N}, 85^{\circ} 13^{\prime} 25.45^{\prime \prime} \mathrm{E}$; alt. 3143 m; 1 Aug. 2020; L.Y. Wang, T. Yuan, P. Liu and Y.M. Hou leg.; SWUC-T-TEg-06-01.

## Paratypes

 data as for preceding; SWUC-T-TEg-06-05-09 • 1 § ; Gyirong County, Gyirong Town, Riwubanba; $28^{\circ} 28.317^{\prime} \mathrm{N}$, $85^{\circ} 13.735^{\prime}$ E; alt. 3233 m ; 15 Jul. 2018; L.Y. Wang, Z.S. Wu and Y.N. Mu leg.; SWUC-T-TEg-06-10.

## Description

Male (holotype, Fig. 1H)
Measurements. Total length 9.32. Prosoma 4.18 long, 3.42 wide; opisthosoma 5.50 long, 3.43 wide. Eye sizes and interdistances: AME 0.21 , ALE 0.23 , PME 0.26 , PLE 0.23 ; AME-AME 0.18 , AMEALE 0.29 , PME-PME 0.19 , PME-PLE 0.29 , ALE-PLE 0.07 . MOA 0.70 long, front width 0.65 , back width 0.69 . Clypeus height 0.29 .

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
Leg measurements. I = 28.68 ( $7.07,9.69,8.69,3.23$ ); $\mathrm{II}=21.24$ ( $5.53,7.63,5.79,2.29$ ); $\mathrm{III}=12.45$ (3.78, $4.09,3.10,1.48) ;$ IV $=16.59$ ( $5.18,5.46,4.38,1.57$ ). Leg formula: 1243.


Fig. 13. Meta tibet sp. nov. A-C. $\delta^{\lambda}$, holotype (SWUC-T-TEg-06-01). D-E. \& paratype (SWUC-T-TEg-06-05). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view.


Fig. 14. Meta tibet sp. nov. A-D. §, holotype (SWUC-T-TEg-06-01). E. §, paratype (SWUC-T-TEg-06-02). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view. E. Embolus and metaine embolic apophysis, dorsal view.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter brown, with white and black markings.


Fig. 15. Meta tibet sp. nov., $q$, paratype (SWUC-T-TEg-06-05). A. Epigyne, ventral view. B. Vulva, dorsal view.

Palp (Figs 13A-B, 14A-E). Cymbial ectobasal process simple, V-shaped with sharp tooth and pointed end. Paracymbium finger-like, narrow towards tip, with sparse long hairs. Metaine embolic apophysis with distal end oval, extending forward.

Embolus. Short, abruptly thin with fine tip. Conductor strong, arc-shaped, arising meso-retrolaterally from bulb and extending clockwise, longer than wide, with membranous end.

Female (paratype SWUC-T-TEg-06-05, Fig. 1I)
Measurements. Total length 10.05. Prosoma 4.48 long, 3.41 wide; opisthosoma 5.50 long, 4.28 wide. Eye sizes and interdistances: AME 0.23 , ALE 0.26 , PME 0.25 , PLE 0.24 ; AME-AME 0.19 , AMEALE 0.30, PME-PME 0.19, PME-PLE 0.34, ALE-PLE 0.07. MOA 0.72 long, front width 0.65 , back width 0.71 . Clypeus height 0.35 .

Leg measurements. I = 21.78 ( $5.78,7.67,5.94,2.39) ; \mathrm{II}=16.88(4.76,5.71,4.52,1.89) ; \mathrm{III}=10.41$ (3.22, $3.38,2.55,1.26) ; \mathrm{IV}=14.03$ (4.32, 4.69, 3.73, 1.29). Leg formula: 1243. Other morphological characteristics same as in male.

Epigyne (Figs 13D-E, 15A-B). Posterior margin of epigynal plate with inconspicuous sclerotized depression.

Vulva. Spermathecae globular, situated anteriorly. Fertilization ducts thick, S-shaped.

## Distribution

China, Tibet (Gyirong) (Fig. 22).

Meta wanglang sp. nov. urn:1sid:zoobank.org:act:4AFF03AB-7F37-4B67-84AE-7BC24DAA7845

Figs $1 \mathrm{~J}-\mathrm{K}, 16-18,22$

## Differential diagnosis

This species can be differentiated from all other congeners by the cymbial ectobasal process robust with three conspicuous projections, the outer projection horn-shaped with pointed end; median projection broad with many denticles and the inner projection relatively sclerotized, thumb-shaped with blunt end in male palp (Figs 16B-C, 17B-D). The female can be differentiated from all other congeners by the spermathecae with buds-like outgrowths (Figs 16E, 18B); posterior margin of epigynal plate relatively membranous (Fig. 18B). Both male and female abdomen anteriorly with a pair of humps (Fig. 1J-K).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • $\begin{gathered}\text { º } \\ \text {; Sichuan Province, Pingwu County, Baima Township, Wanglang Nature Reserve, }\end{gathered}$ Muyangchang; $32^{\circ} 58^{\prime} 04^{\prime \prime}$ N, $104^{\circ} 06^{\prime} 18^{\prime \prime}$ E; alt. 2503 m; 24 Sep. 2019; L.Y. Wang, P. Liu, T. Yuan, Z. Fan, Y. Zhang and M. Zhang leg.; SWUC-T-TEg-07-01.

## Paratypes

CHINA • $1 \delta^{\top}$; same collection data as for holotype; SWUC-T-TEg-07-02• 9 q $q$; same collection data as for preceding; SWUC-T-TEg-07-03-11 • 1 q; Muyangchang; $32^{\circ} 58^{\prime} 04^{\prime \prime} \mathrm{N}, 104^{\circ} 06^{\prime} 18^{\prime \prime} \mathrm{E}$;
alt. 503 m ; 13 Oct. 2018; Z.S. Zhang, L.Y. Wang, Z. Fan, P. Liu and T. Yuan leg.; SWUC-T-TEg-07-12 - $1 \delta^{\text {º }}$; Muyangchang; $32^{\circ} 58^{\prime} 04^{\prime \prime}$ N, $104^{\circ} 06^{\prime} 18^{\prime \prime}$ E; alt. $2503 \mathrm{~m} ; 23$ Aug. 2016; L.Y. Wang and Z.S. Wu leg.; SWUC-T-TEg-07-13•2 $\uparrow$ ? $\uparrow$ same collection data as for preceding; SWUC-T-TEg-07-14-15.

## Description

Male (holotype, Fig. 1J)
Measurements. Total length 5.84. Prosoma 2.81 long, 2.14 wide, opisthosoma 3.28 long, 2.53 wide. Eye sizes and interdistances: AME 0.16, ALE 0.17, PME 0.17, PLE 0.19 ; AME-AME 0.13 , AMEALE 0.19 , PME-PME 0.11, PME-PLE 0.24, ALE-PLE 0.03. MOA 0.52 long, front width 0.44 , back width 0.48 . Clypeus height 0.17 .

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
Leg measurements. $\mathrm{I}=10.68(3.69,4.76,3.44,1.45) ; \mathrm{II}=8.83(3.09,3.84,2.56,1.23) ; \mathrm{III}=4.93$ (1.90, $1.96,1.37,0.84) ; \mathrm{IV}=6.40(2.59,2.68,1.97,0.88)$. Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Anteriorly with pair of humps, dorsum and venter white, with black markings.

Palp (Figs 16A-C, 17A-D). Cymbial ectobasal process robust, with three conspicuous projections, outer projection horn-shaped with pointed end; median projection broad with many teeth and inner projection


Fig. 16. Meta wanglang sp. nov. A-C. ${ }^{\lambda}$, holotype (SWUC-T-TEg-07-01). D-E. , paratype (SWUC-T-TEg-07-03). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view.
relatively sclerotized, thumb-shaped with blunt end. Paracymbium finger-like, relatively broad tip, with sparse long hairs. Metaine embolic apophysis grooved, with blunt end, extending forward.


Fig. 17. Meta wanglang sp. nov., $\widehat{O}$, holotype (SWUC-T-TEg-07-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view.

Embolus. Long, arc-shaped with fine tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, longer than wide.


Fig. 18. Meta wanglang sp. nov., Q, paratype (SWUC-T-TEg-07-03). A. Epigyne, ventral view. B. Vulva, dorsal view.

Female (paratype SWUC-T-TEg-07-03, Fig. 1K)
Measurements. Total length 7.37. Prosoma 3.26 long, 2.60 wide; opisthosoma 4.49 long, 3.73 wide. Eye sizes and interdistances: AME 0.18, ALE 0.23, PME 0.20, PLE 0.23; AME-AME 0.16, AMEALE 0.25, PME-PME 0.14, PME-PLE 0.30, ALE-PLE 0.04. MOA 0.56 long, front width 0.55 , back width 0.61 . Clypeus height 0.22 .

Leg measurements. $\mathrm{I}=14.84(4.08,5.23,3.80,1.73) ; \mathrm{II}=12.82(3.62,4.60,3.15,1.45) ; \mathrm{III}=7.52(2.49$, $2.30,1.68,1.05) ; \mathrm{IV}=10.00(3.17,3.27,2.49,1.07)$. Other morphological characteristics same as in male, except opisthosoma lighter in color with few black markings.

Epigyne (Figs 16D-E, 18A-B). Posterior margin of epigynal plate relatively membranous.
Vulva. Spermathecae with buds-like outgrowths. Fertilization ducts thick, C-shaped.

## Distribution

China, Sichuan (Pingwu County) (Fig. 22).

Meta weining sp. nov. urn:lsid:zoobank.org:act:B4BF84EA-2EF2-4C71-9E5C-0024D0705A84

Figs 1L-M, 19-22


Fig. 19. Meta weining sp. nov. A-C. §, holotype (SWUC-T-TEg-08-01). D-E. q, paratype (SWUC-T-TEg-08-03). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Epigyne, ventral view. E. Vulva, dorsal view.


Fig. 20. Meta weining sp. nov., $\widehat{O}$, holotype (SWUC-T-TEg-08-01). A. Left palp, prolateral view. B. Same, ventral view. C. Same, retrolateral view. D. Same, dorsal view.

## Differential diagnosis

This new species resembles $M$. tibet sp. nov. (Figs 13-15) in having a similar embolus; V-shaped cymbial ectobasal process in male palp and epigynal plate posteriorly with small, sclerotized depression in female epigyne, but it can be differentiated by the embolus gradually narrow towards the tip in M. weining sp. nov. (Figs 19B-C, 20B-D), whereas abruptly narrow in M. tibet sp. nov. (Figs 13A-B, 14A, C, E). Metaine embolic apophysis longer than wide in ventral view in M. weining sp. nov. (Figs 19B, 20C),


Fig. 21. Meta weining sp. nov., , paratype (SWUC-T-TEg-08-03). A. Epigyne, ventral view. B. Vulva, dorsal view.
whereas wider than long in M. tibet sp. nov. (Figs 13B, 14C). Cymbial ectobasal process tooth present at the end of lateral arm in ventral view in M. weining sp. nov. (Figs 19B, 20C), whereas tooth present on the lateral arm in M. tibet sp. nov. (Figs 13B, 14C). Spermathecae semicircular and fertilization ducts move around the spermathecae from dorsal to the ventral side of epigyne in M. weining sp. nov. (Figs 19E, 21B), whereas spermathecae globular and fertilization ducts move around the spermathecae from ventral to the dorsal side of epigyne in M. tibet sp. nov. (Figs 13E, 15B).

## Etymology

The epithet refers to the type locality.

## Type material

## Holotype

CHINA • $\widehat{\text { ºn }}$; Guizhou, Bijie City, Weining County, Shanqiaojiedao, Dashan Village, Gaodiping Cave; $26^{\circ} 50^{\prime} 55.03^{\prime \prime} \mathrm{N}, 104^{\circ} 17^{\prime} 08.81^{\prime \prime} \mathrm{E}$; alt. 2175 m ; 23 Apr. 2017; H.M. Chen leg.; SWUC-T-TEg-08-01.

## Paratypes

CHINA • $1 \delta^{\top}$; same collection data as for holotype; SWUC-T-TEg-08-02•2 $q$ q ; same collection data as for preceding; SWUC-T-TEg-08-03-04.

## Description

Male (holotype, Fig. 1L)
Measurements. Total length 7.92. Prosoma 3.54 long, 2.83 wide; opisthosoma 4.32 long, 3.00 wide. Eye sizes and interdistances: AME 0.22, ALE 0.22, PME 0.21, PLE 0.20; AME-AME 0.14, AME-


Fig. 22. Distribution records of seven new species of the genus Meta C.L. Koch, 1836 in Southwest China.

ALE 0.21, PME-PME 0.18, PME-PLE 0.29, ALE-PLE 0.05. MOA 0.58 long, front width 0.57 , back width 0.61 . Clypeus height 0.26 .

Chelicerae. Strong, with 3 promarginal and 4 retromarginal teeth.
LEG MEASUREMENTS. $\mathrm{I}=18.59(5.01,6.53,5.05,2.00) ; \mathrm{II}=14.46(4.15,5.06,3.75,1.50) ; \mathrm{III}=7.74(2.42$, $2.62,1.80,0.90) ; \mathrm{IV}=11.03$ (3.54, 3.53, 2.84, 1.12). Leg formula: 1243.

Opisthosoma. Oval, with two pairs of sigillae. Both dorsum and venter greyish, with black markings.
Palp (Figs 19A-C, 20A-D). Cymbial ectobasal process simple, V-shaped with pointed end. Paracymbium finger-like, narrow towards tip, with sparse long hairs. Metaine embolic apophysis distal end oval, longer than wide with blunt end, extending forward.

Embolus. Long, arc-shaped, with curved tip. Conductor strong, arising meso-retrolaterally from bulb and extending clockwise, longer than wide, with membranous end.

Female (paratype SWUC-T-TEg-08-03, Fig. 1M)
Measurements. Total length 7.50. Prosoma 3.14 long, 2.59 wide; opisthosoma 4.42 long, 3.61 wide. Eye sizes and interdistances: AME 0.18 , ALE 0.23 , PME 0.21, PLE 0.20 ; AME-AME 0.18 , AME-ALE 0.20 , PME-PME 0.14 , PME-PLE 0.23 , ALE-PLE 0.07 . MOA 0.61 long, front width 0.52 , back width 0.58 . Clypeus height 0.28 .

Leg measurements. $\mathrm{I}=14.05$ (3.95, 5.03, 3.48, 1.59); $\mathrm{II}=10.84$ (3.18, 3.75, 2.64, 1.27); $\mathrm{III}=6.51$ ( 1.94 , $2.21,1.49,0.87) ; \mathrm{IV}=8.93$ ( $2.86,3.01,2.05,1.01$ ). Leg formula: 1243. Other morphological characteristics same as in male.

Epigyne (Figs 19D-E, 21A-B). Posterior margin of epigynal plate with indistinct sclerotized depression.
Vulva. Spermathecae semicircular. Fertilization ducts thick, S-shaped.

## Distribution

China, Guizhou (Weining) (Fig. 22).

## Discussion

The members of the genus Meta can be found in cliffs around cave entrances or among large stones in forest gullies. Due to the specific and isolated habitats of species of Meta, the existence of cave-endemic species is expected (Wang et al. 2020b). Combined with our previous work (Wang et al. 2020b), the number of endemic species found in Southwest China reaches 13. The specimens of all the species described here were collected on the cliffs and in mountainous ranges of southern China. However, this does not represent the actual number of species of Meta in the region. In order to reveal the actual species of long-jawed orbweavers spiders, it is still necessary to conduct an extensive survey in areas that have not yet been explored.

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## References

Álvarez-Padilla F. \& Hormiga G. 2011. Morphological and phylogenetic atlas of the orb-weaving spider family Tetragnathidae (Araneae: Araneoidea). Zoological Journal of the Linnean Society 162: 713-879. https://doi.org/10.1111/j.1096-3642.2011.00692.x

Cai J., Yu W.B., Zhang T., Wang H., \& Li D.Z. 2019. China’s biodiversity hotspots revisited: A treasure chest for plants. PhytoKeys 130: 1-24. https://doi.org/10.3897/phytokeys.130.38417
Li S.Q. \& Lin Y.C. 2016. Species Catalogue of China, Vol. 2, Animals, Invertebrates (I), Arachnida: Araneae. Science Press, Beijing.
Wang L.Y., Zhang Z.S. \& Peng X.J. 2020a. Dolichognatha bannaensis new species, a six-eyes tetragnathid spider from China (Araneae, Tetragnathidae). Zootaxa 4809 (1): 197-200. https://doi:10.11646/zootaxa.4809.1.14
Wang L.Y., Zhou G.C., Irfan M., Yang S.F. \& Peng X.J. 2020b. Five new species of Meta Koch, 1836 (Araneae: Tetragnathidae) from Gaoligong Mountains, China. European Journal of Taxonomy 624: 1-25. https://doi:10.5852/ejt. 2020.624

World Spider Catalog. 2022. World Spider Catalog. Version 23.0. Natural History Museum Bern. Available from http://wsc.nmbe.ch [accessed 21 May 2022].

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