

DESCRIPTION OF TWO NEW *OTACILIA* SPECIES FROM ANHUI, CHINA (ARANEAE, PHRUROLITHIDAE)

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The present paper reports two new *Otacilia* species from Huangshan, Anhui, China: *Otacilia obesa* sp. n. and *O. macrospora* sp. n.

Key words: spider, taxonomy, China.

INTRODUCTION

Phrurolithidae Banks 1892, raised to family status by RAMÍREZ (2014) in agreement with DEELEMAN-REINHOLD (2001), currently consists of 14 genera and 188 species (WORLD SPIDER CATALOG 2015). The Phrurolithidae are hunting spiders living in leaf litter, especially bamboo leaves, woody debris or on the forest floor.

Otacilia Thorell, 1897, one of the most species-rich genera of the sac spider family Phrurolithidae (WORLD SPIDER CATALOG 2015), is widely distributed in Southeast Asia and East Asia. Presently, 39 *Otacilia* species have been reported in the world. This genus can be recognized by the following characteristics: a relatively broad opisthosomal scutum (less than half of the opisthosoma) in most males; one or two strong anterior bristles on chelicerae; several prolateral spines (most often four) on femur I; six to ten retroventral or proventral spines on tibia I; a femoral ventral apophysis with a depression retrolaterally on male palp; one or two RTA with different sizes; weakly sclerotized bulb and relatively short embolus; epigyne generally with a median plate and vulva with pairs of transparent bursae and spermathecae (JÄGER & WUNDERLICH 2012).

While examining the collections from Huangshan, Anhui, China, we found some *Otacilia* specimens which are different from the currently known *Otacilia* species. They are identified as two new species: *O. obesa* sp. n. and *O. macrospora* sp. n.

MATERIAL AND METHODS

The terminology follows HU and ZHANG (2011) and JÄGER and WUNDERLICH (2012). All measurements given in the text are in millimeters. Carapace length was measured from the anterior margin to the rear margin of the carapace medially. Eye sizes were measured as the maximum diameter in dorsal or frontal view. Leg measurements are shown as: total length (femur, patella, tibia, metatarsus, tarsus). Total length is the sum of the carapace and abdomen lengths, regardless of the petiolus. Epigynes were removed and cleared in a warm solution of 10% potassium hydroxide, transferred to alcohol and temporarily mounted for drawing. All specimens are preserved in 75% alcohol and were examined, drawn and measured under a Leica M205A stereomicroscope equipped with an Abbe drawing device. Photographs were taken using a Leica M205A stereomicroscope equipped with a DFC450 CCD. The specimens are deposited in the Museum of Hebei University, Baoding, China (MHBU).

The following abbreviations are used: AER, anterior eye row; ALE, anterior lateral eyes; AME, anterior median eyes; BU, bursae; CD, copulatory duct; CO, copulatory openings; E, embolus; FA, femoral apophysis; FD, fertilization ducts; MOA, median ocular area; MP, median plate; PER, posterior eye row; PLE, posterior lateral eyes; PME, posterior median eyes; PMS, posterior median spinnerets; RTA, retrolateral tibial apophysis; SD, sperm duct; SP, spermathecae; TA, tegular apophysis.

TAXONOMY

***Otacilia obesa* sp. n.** (Figs 1–13)

Type material. Holotype male, China, Anhui Province, Huangshan City, Xiuning County, Qiyun Mountain (29°48.269'N, 118°02.298'E), 22 October 2013, Luyu Wang leg. Paratypes: 18 males and 18 females, same data as holotype; 7 males and 2 females, Qiyun Mountain, Dongtianfudi (29°48.427'N, 118°02.457'E), 22 October 2013, Luyu Wang leg.; 6 males and 5 females, Qimen County, Gu'niujiang (30°01.080'N, 117°31.780'E), 23 October 2013, Luyu Wang leg.

Etymology. The species name comes from the Latin word '*obesus*', meaning 'obese', referring to the round bulb of the male palp.

Diagnosis. The new species is characterized by the following combination of characters: dark body color and markings; round bulb, hook-shaped embolus, long and sharp tegular apophysis; basally wide and apically pointed RTA; presence of a small depression retrolaterally on femoral apophysis in the male; rectangular and long epigynal median plate; small copulatory openings; and oval, anteriorly transparent bursae in the female.

Description – Male (Fig. 1). Total length 2.91–3.09 (n = 8). Holotype body 3.03 long; carapace 1.49 long, 1.26 wide; abdomen 1.44 long, 0.86 wide. Carapace oval, narrow anteriorly; yellowish, with broad median grey stripe; thoracic part higher than the cephalic part; fovea longitudinal, distinct. In dorsal view, AER slightly recurved, PER slightly wider

than AER and almost straight. Diameter of eyes: AME 0.06, ALE 0.08, PME 0.07, PLE 0.08. Interdistances of eyes: AME–AME 0.05, AME–ALE 0.02, PME–PME 0.09, PME–PLE 0.06. MOA 0.23 long, front 0.18 wide, back 0.25 wide. Clypeus 0.10 high. Chelicerae with one or two strong anterior bristles; cheliceral promargin with three well-separated teeth and retromargin with five clustered denticles. Labium slightly wider than long. Legs light brown. Leg measurements: leg I 5.41 (1.48, 0.22, 1.76, 1.31, 0.64), II 4.48 (1.21, 0.39, 1.23, 1.04, 0.61), III 3.86 (1.05, 0.44, 0.86, 1.05, 0.46), IV 5.50 (1.70, 0.31, 1.15, 1.52, 0.82). Leg formula: 4123. Femora I–IV basally with one dorsal spine. Femora I with four prolateral spines and femora II with two prolateral spines; tibiae I with eight proventral spines and nine retroventral spines, tibiae II with eight proventral spines and seven retroventral spines; metatarsi I with four pairs of ventral spines, metatarsi II with four proventral spines and three retroventral spines. Abdomen grey; anterior part with a U-shaped dorsal scutum, almost occupying 1/2 length and 2/3 width of the whole abdomen; posterior part dark brown, with several chevron-like stripes dorsally.

Palp (Figs 3–6, 9–11). Palpal femur with an subdistal apophysis and a retrolateral concavity; tibia with a large, posteriorly extending RTA consisting of a broad base and a finger-shaped tip; distal cymbium ventrally with a row of setae; tegulum convex, TA long and thin, extending beyond margin of tegulum; embolus hook-shaped, slightly sharp apically.

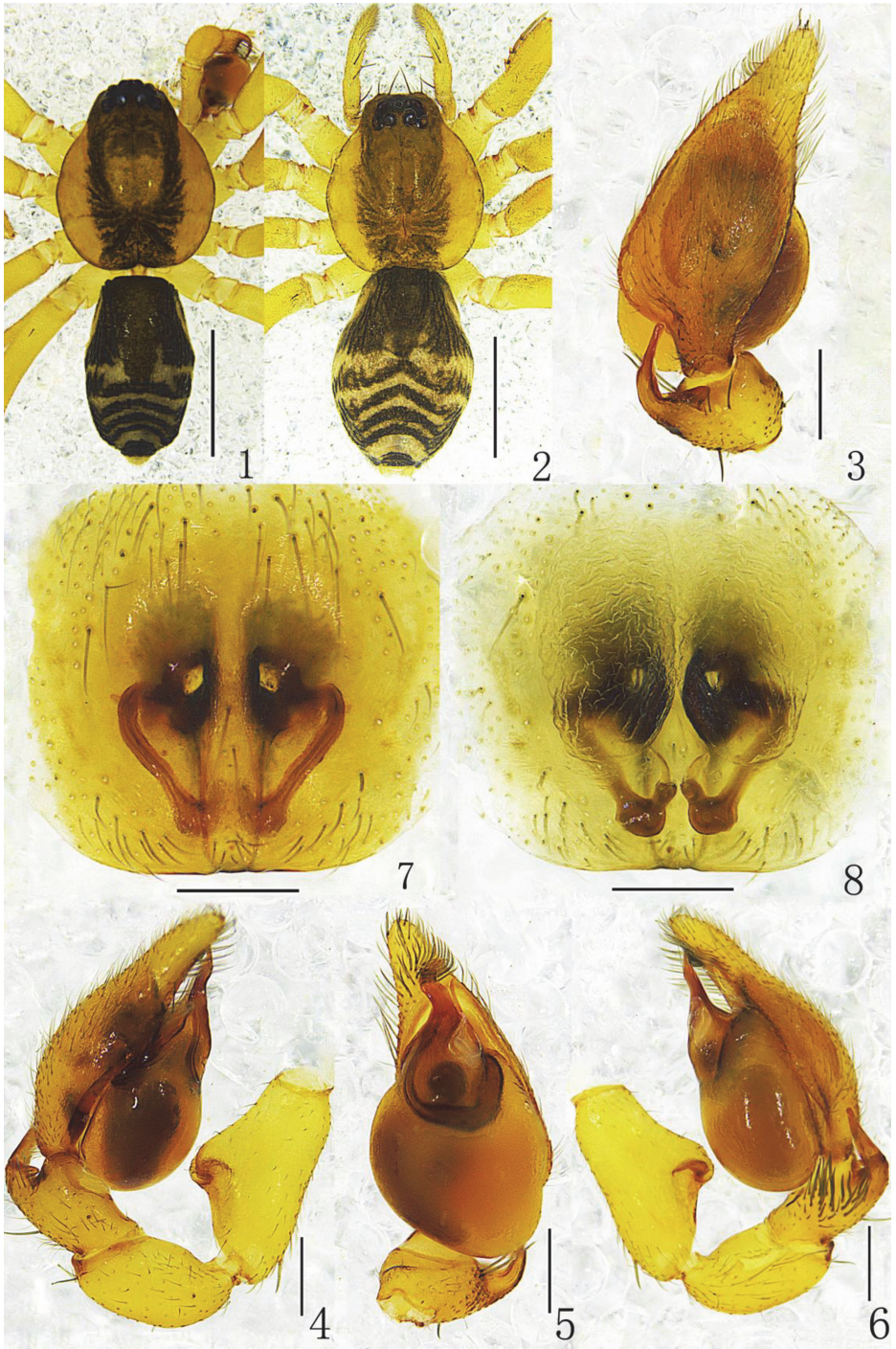
Female (Fig. 2). Total length 3.02–3.49 (n = 7). One paratype from Qiyunshan Mountain: body 3.21 long; carapace 1.41 long, 1.30 wide; abdomen 1.62 long, 1.15 wide. Carapace light brown, oval, abruptly narrow anteriorly. Diameter of eyes: AME 0.06, ALE 0.08, PME 0.07, PLE 0.08. Eye interdistances: AME–AME 0.06, AME–ALE 0.03, PME–PME 0.11, PME–PLE 0.06. MOA 0.24 long, front 0.18 wide, back 0.26 wide. Clypeus 0.08 high. Chelicerae light brown. Labium and gnathocoxae brown. Legs and palps yellowish brown. Leg measurements: I 5.52 (1.57, 0.32, 1.76, 1.41, 0.46), II 4.43 (1.32, 0.37, 1.22, 0.96, 0.56), III 3.82 (1.05, 0.36, 0.86, 0.98, 0.57), IV 5.89 (1.63, 0.47, 1.44, 1.59, 0.76). Leg formula: 4123. Femora I–IV basally with one dorsal spine. Femora I with five (left) and three (right) prolateral spines, and femora II with three prolateral spines; tibiae I with nine pairs of ventral spines, tibiae II with eight pairs of ventral spines; metatarsi I and II with the same spination as male. Abdomen without dorsal scutum. Other characters as in male.

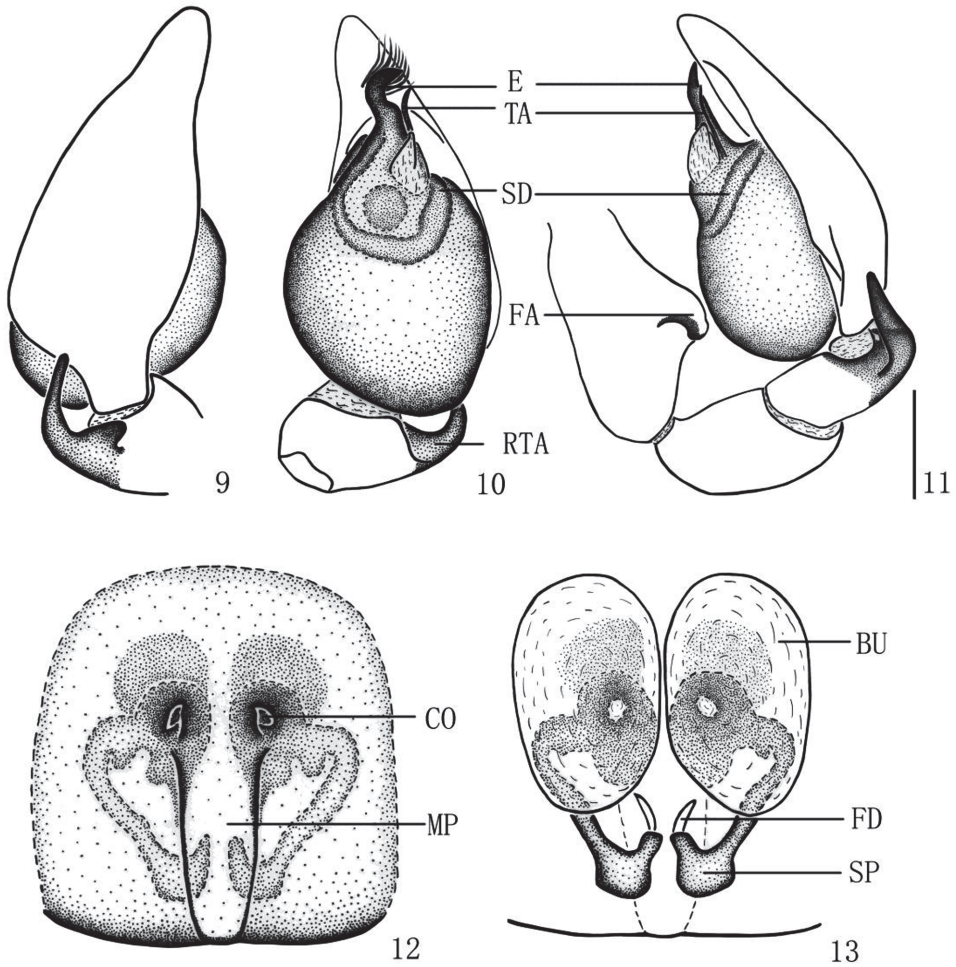
Epigyne (Figs 7–8, 12–13): median plate rectangular, longer than wide, with parallel lateral margin. Copulatory openings small, oval, situated medially on epigyne (Figs 7, 12). Vulva anteriorly with a pair of large transparent egg-shaped bursae, posteriorly with a pair of thick, closely situated spermathecae; copulatory ducts relatively long.

Distribution. China (Anhui).

Remarks. The new species resembles several Chinese *Otacilia* species, but it differs from *O. komurai* (Yaginuma, 1952) by: long and sharp tegular apophysis (shorter in the latter), and parallel bursae (diverging relatively in the latter). It can be separated from *O. foveata* (Song, 1990) and *O. liupan* Hu et Zhang, 2011 by: parallel lateral margin of epigynal median plate (not parallel in *O. foveata* and *O. liupan*), and large bursae (smaller bursae in the latter). It also can be distinguished from *O. jianfengling* Fu, Zhang et Zhu, 2010 and *O. fujiana* Fu, Jin et Zhang, 2014 by: narrow median plate (broader in the latter), and RTA with a wide base and pointed tip (a curve tip in the latter).

This new species can be easily distinguished from other *Otacilia* species, such as, it differs from *O. armatissima* Thorell, 1897 (type species of the *Otacilia*





Figs 9–13. *Otacilia obesa* sp. n.: 9–11: left male palp: 9 = dorsal view, 10 = ventral view, 11 = retrolateral view; 12 = epigyne, ventral view; 13 = vulva, dorsal view. Scale bars: 0.25 mm (9–11); 0.50 mm (12–13).

from Myanmar) by long and curve copulatory ducts (shorter in the latter), and narrow parallel lateral margin of median plate (broader in the latter). It is separated from *O. christae* Jäger et Wunderlich, 2012 and *O. vangvieng* Jäger et Wunderlich, 2012 (occurs in Laos) by hook-shaped embolus (not hook-shaped

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Figs 1–8. *Otacilia obesa* sp. n.: 1 = male habitus, dorsal view; 2 = female habitus, dorsal view; 3–6 = left male palp: 3 = dorsal view, 4 = prolateral view, 5 = ventral view, 6 = retrolateral view; 7 = epigyne, ventral view; 8 = vulva, dorsal view. Scale bars: 1.00 mm (1–2); 0.20 mm (3–8).

in the latter), and a long RTA (shorter in the latter); it is distinguished from *O. bifurcata* Dankittipakul et Singtripop, 2014 and *O. truncata* Dankittipakul et Singtripop, 2014 (occurs in Thailand) by long and thick embolus (shorter and sharper in the latter), single RTA (two different RTA in the latter), and presence of parallel epigynal median plate (absent epigynal median plate in the latter).

Otacilia macrospora sp. n.
(Figs 14–26)

Type material. Holotype male, China, Anhui Province, Huangshan City, Lingnan Natural Reserve (29°25.798'N, 118°12.415'E), 20 October 2013, Zhisheng Zhang leg. Paratypes: 2 males and 4 females, same data as holotype.

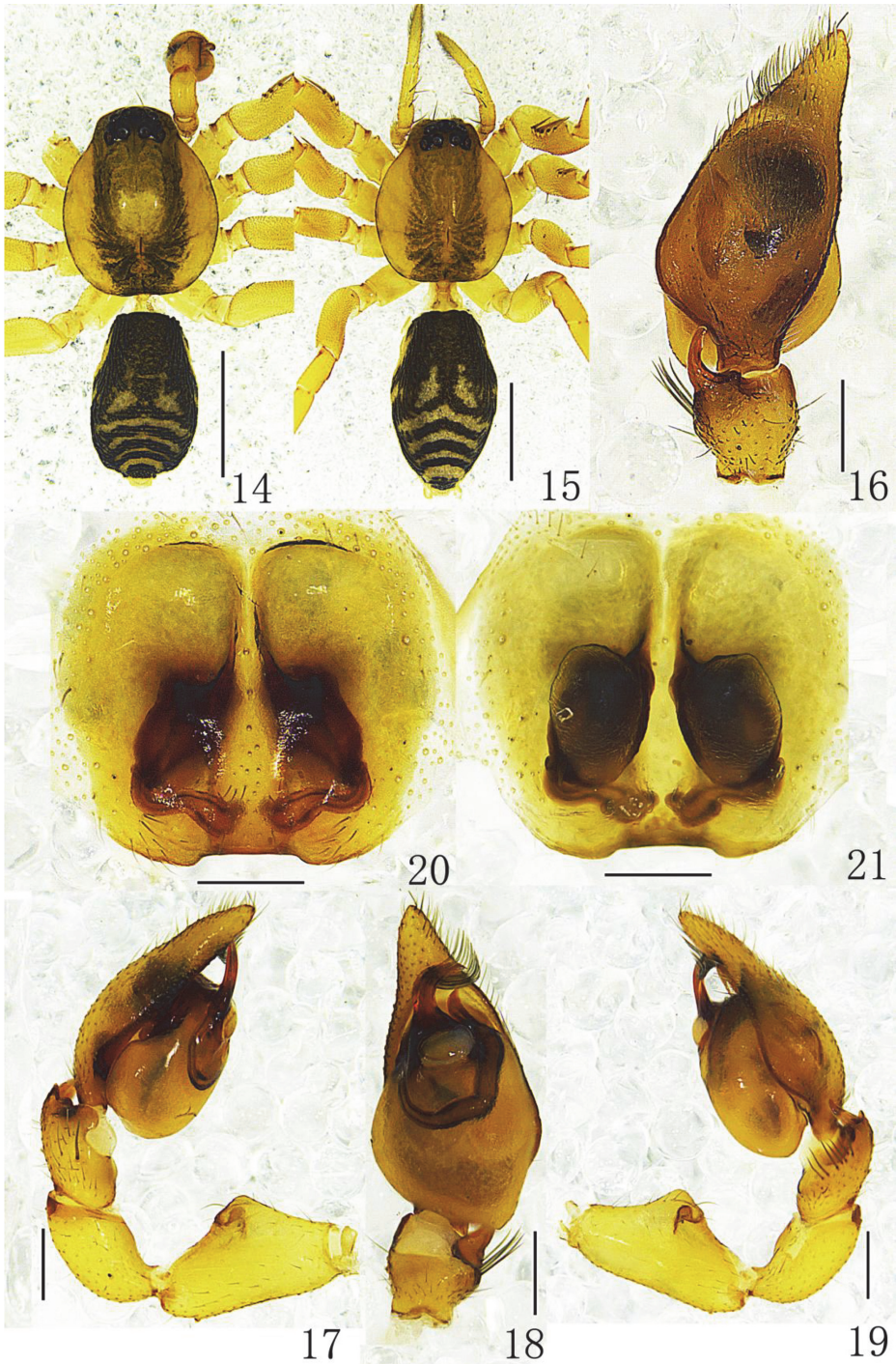
Etymology. The specific name is a combination of 'macros' and 'porus', referring to the large epigynal atrium.

Diagnosis. The new species is characterized by the following combination of characters: RTA thick with a small, flange-like extension located subapically; embolus crescent-shaped; TA sickle-shaped; sperm duct relatively long and curved; lateral margin of epigynal median plate parallel; atrium large, situated anteriorly; spermathecae small; copulatory duct long and bent; bursae small and oval, situated posteriorly; the posterior margin of epigynal plate with a notch.

Description – Male (Fig. 14). Total length 2.89–2.99 (n = 3). Holotype: body 2.89 long; carapace 1.41 long, 1.22 wide; abdomen 1.35 long, 0.84 wide. Carapace oval, narrow anteriorly, yellowish, with broad median grey stripe; thoracic part higher than the cephalic part; fovea longitudinal, distinct. Diameter of eyes: AME 0.08, ALE 0.09, PME 0.07, PLE 0.06. Eye interdistances: AME–AME 0.06, AME–ALE 0.02, PME–PME 0.10, PME–PLE 0.07. MOA 0.25 long, front 0.19 wide, back 0.26 wide. Clypeus 0.11 high. Chelicerae light brown, with two bristles anteriorly; promargin of cheliceral furrow with three well-separated teeth and retromargin with five teeth. Labium and gnathocoxae brown. Legs and palps yellowish brown. Leg measurements: I 5.69 (1.48, 0.37, 1.74, 1.42, 0.68); II 4.70 (1.26, 0.47, 1.31, 1.08, 0.58); III 4.13 (1.13, 0.44, 0.92, 1.09, 0.55); IV 5.98 (1.58, 0.43, 1.32, 1.79, 0.86). Leg formula: 4123. Femora I–IV with only one dorsal spine. Femora I with four prolateral spines and femora II with two prolateral spines; tibiae I with seven proventral spines and eight retroventral spines, tibiae II with seven pairs of ventral spines; metatarsi I with four pairs of ventral spines, metatarsi II with four proventral spines and three retroventral spines. Abdomen grey; anterior part without distinct scutum; posterior part dark brown, with several chevron-like stripes dorsally.

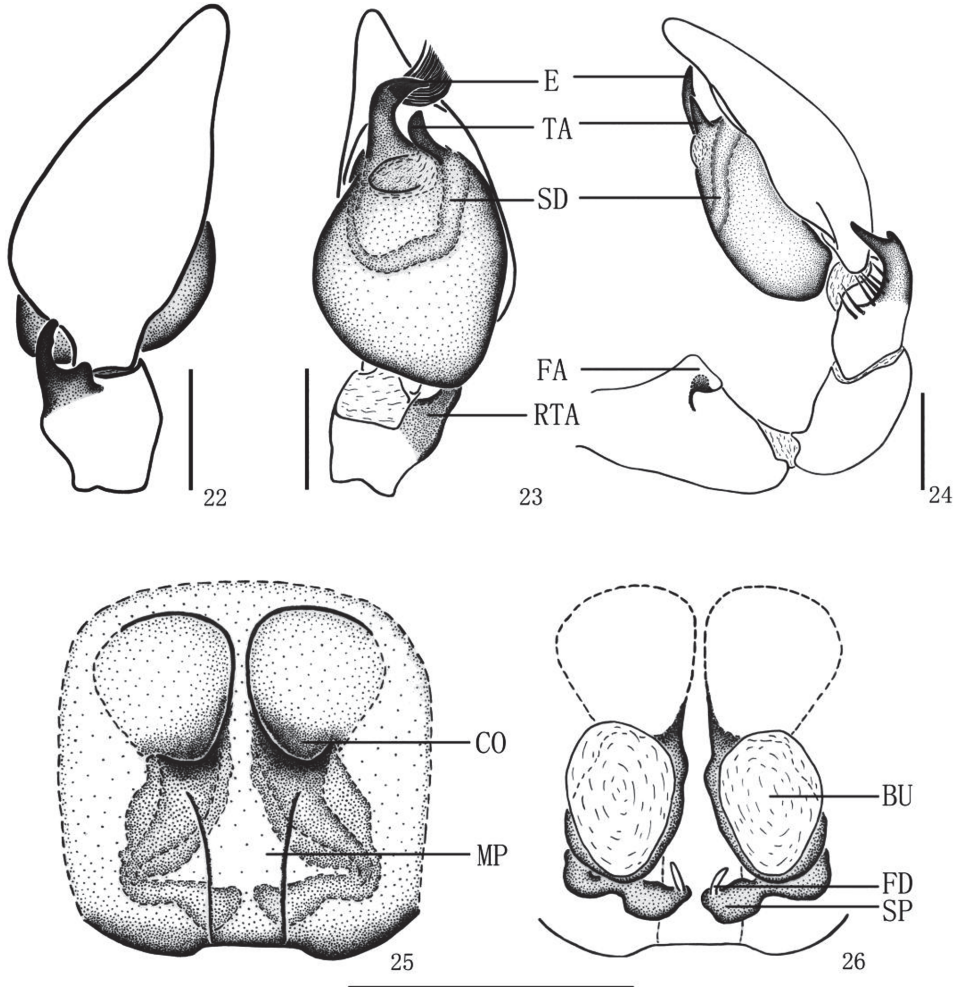
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Figs 14–21. *Otacilia macrospora* sp. n.: 14 = male habitus, dorsal view; 15 = female habitus, dorsal view; 16–19 = left male palp: 16 = dorsal view, 17 = prolateral view, 18 = ventral view, 19 = retrolateral view; 20 = epigyne, ventral view; 21 = vulva, dorsal view. Scale bars: 1.00 mm (14–15); 0.20 mm (16–21).



Palp (Figs 16–19, 22–24). Palpal femur with an median apophysis ventrally and a retrolateral concavity; RTA broad basally, pointed apically with a very small almost flange-like extension subapically; tibia distally with a row of long spines; tegular apophysis thick and short, sickle-shaped; embolus long and curved, crescent-shaped.

Female (Fig. 15). Total length 3.04–3.75 (n = 4). One paratype: body 3.75 long; carapace 1.65 long, 1.40 wide; abdomen 1.87 long, 1.08 wide. Carapace brown, abruptly narrow anteriorly; fovea longitudinal. Diameter of eyes: AME 0.07, ALE 0.08, PME 0.08, PLE 0.07. Eye interdistances: AME–AME 0.06, AME–ALE 0.02, PME–PME 0.11, PME–PLE 0.06. MOA 0.26 long, front 0.20 wide, back 0.28 wide. Clypeus 0.09 high. Leg measurements: I



Figs 22–26. *Otacilia macrospora* sp. n.: 22–24: left male palp: 22 = dorsal view, 23 = ventral view, 24 = retrolateral view; 25 = epigyne, ventral view; 26 = vulva, dorsal view. Scale bars: 0.25 mm (22–24); 0.50 mm (25–26).

6.37 (1.83, 0.36, 2.02, 1.43, 0.73); II 4.86 (1.52, 0.33, 1.47, 1.02, 0.52); III 3.78 (1.05, 0.27, 0.93, 0.91, 0.62); IV 6.51 (1.82, 0.49, 1.63, 1.73, 0.84). Leg formula: 4123. Femora I–IV with one dorsal spine. Femur I with five prolateral spines and femur II with three prolateral spines; tibiae and metatarsi I and II with the same spination as male. Abdomen grey dorsally. Other characters as in male.

Epigyne (Figs 20–21, 25–26): median plate rectangular, longer than wide, with parallel lateral margin; copulatory openings located in shallow atrium (Figs 20, 25). Vulva located posteriorly, with a pair of small, transparent egg-shaped bursae; spermathecae small sac-like, connecting with strongly curved copulatory ducts.

Distribution. China (Anhui).

Remarks. The new species *O. macrospora* resembles *O. liupan*, but can be distinguished from the latter by: 1) crescent-shaped embolus (hook-shaped in the latter); 2) thick and short TA (thinner and longer in the latter); 3) RTA with a smaller flange-like extension subapically (flange-like extension absent in the latter); 4) bursae located posteriorly (anteriorly in the latter); 5) parallel lateral margin of median plate (not parallel lateral margin of median plate in the latter).

It also can be distinguished from other *Otacilia* species, such as, it differs from *O. armatissima* by longer copulatory ducts (short in the latter); it is separated from *O. bicolor* Jäger et Wunderlich, 2012 and *O. namkhan* Jäger et Wunderlich, 2012 (occur in Laos) by presence of median plate (median plate absent in the latter) and single RTA (two different RTA in the latter). It is also distinguished from *O. vulpes* (Kamura, 2001), *O. stella* Kamura, 2005 and *O. mustela* Kamura, 2008 (occur in Japan) by crescent-shaped embolus (not crescent-shaped in the latter).

As to the two new species in this paper, both of them have parallel lateral margin of epigynal median plate; however, the two species obviously differ from each other by the shapes of TA and RTA, the positions of COs and BU: *O. macrospora* with short and thick TA, while with slender TA in *O. obesa*; *O. macrospora* bearing thick RTA with a very small almost flange-like extension subapically, while without flange-like extension in the latter; *O. macrospora* with bursae posteriorly; while anteriorly in the latter.

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