A new species of the genus *Sphingius* (Araneae, Liocranidae) from China, and first description of the female: *Sphingius hainan* Zhang, Fu & Zhu, 2009

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Abstract

A new species of the genus *Sphingius* to the family Liocranidae from Hainan Province is described and illustrated under the name of *Sphingius deelemanae* sp. n. In this paper the female of *Sphingius hainan* Zhang, Fu & Zhu, 2009 is described for the first time.

Keywords

Spider, taxanomy, new species, China

Introduction

The spider family Liocranidae currently contains 30 genera and 173 species worldwide, according to Platnick (2010). The spider genus *Sphingius* Thorell, 1890 was described based on the type species, *Sphingius thecatus* Thorell, 1890, from Malaysia, and the type is known from the male only. The genus *Sphingius*, so far, includes 21 described species distributed only in Southeast Asia (Platnick 2010). The species is mainly found

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While examining the spider specimens collected in 2009 from Hainan Island, southern China, we found a few liocranid specimens. Among these we recognized one new species, *Sphingius deelemanae* sp. n., and we also first describe the female of *Sphingius hainan* Zhang, Fu & Zhu, 2009.

Materials and methods

All measurements given in the text are in millimeters. Carapace length was measured from the anterior face of the ocular area to the rear margin of the carapace medially, excluding the clypeus. Total length is the sum of carapace and abdomen length, regardless of the petiolus. The measurements of the legs are as follows: total length (femur + patella + tibia + metatarsus + tarsus). All specimens are preserved in 75% alcohol and were examined, drawn and measured under a Tech SMZ1500 stereomicroscope equipped with an Abbe drawing device. Epigyna were removed and cleared in 10% warm solution of potassium hydroxide (KOH), transferred to alcohol and temporarily mounted for drawing. Palpal organs were drawn in prolateral, ventral, and retrolateral view. Specimens examined in this paper are deposited in the Museum of Hebei University (MHBU), Baoding, China, unless indicated otherwise.

The following abbreviations are used in the text: AER, anterior eye row; ALE, anterior lateral eyes; ALS, anterior lateral spinneret; AME, anterior median eyes; AME–ALE, distance between AME and ALE; AME–AME, distance between AME; MOA, median ocular area; PER, posterior eye row; PLE, posterior lateral eyes; PLS, posterior lateral spinneret; PME, posterior median eyes; PME–PLE, distance between PME and PLE; PME–PME, distance between PME; PMS, posterior median spinneret.

Taxonomy

*Sphingius* Thorell, 1890


*Thamphilus* Thorell 1895: 35.


*Scotophaeoides* Schenkel 1963: 49.

Type species: *Sphingius thecatus* Thorell, 1890, by original designation.

Diagnosis and description: see Zhang et al. 2009.
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Figures 1–7. *Sphingius deelemanae* sp. n. 1 Male body, dorsal view 2 Male abdomen, ventral view 3 Endites, labium and sternum of male, ventral view 4 Male right chelicera, anterior view 5 Male left palp, ventral view 6 Same, prolateral view 7 Same, retrolateral view  c conductor  e embolus  es epigastric scutum  is intercoxal sclerites  ma median apophysis  pt precoxal triangles  sd sperm duct  st subtegulum  t tegulum  ta tibial apophysis  vs ventral scutum. Scale bars: 1 mm (1–3); 0.4 mm (4–7).
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PME–PME 0.16, PME–PLE 0.14; MOA 0.28 long, front width 0.26, back width 0.25. Thoracic groove obsolete. Chelicerae reddish brown (Fig. 4), with three pro-marginal and three retromarginal teeth, anterior surface somewhat swollen. Endites, labium and sternum dark brown (Fig. 3). Sternum shield-shaped, lateral margin with precoxal triangles and intercoxal sclerites. Space above the coxae and below the carapace with longitudinal, sclerotized pleural bars. Leg spination: femora I-IV with one small dorsal spine, tibia III v1-1-0, p0-0-1, metatarsus III v0-2-0; tibia IV v2-2-1, r0-0-1, metatarsus IV p0-1-0, v0-1-0, r0-1-0. Leg formula: 4123 (Table 1).

Abdomen (Fig. 1) dark brown dorsally, with nearly entire dorsal scutum, epigastric and postgenital scutum fused to some extent, postgenital scutum relatively large, about two thirds of abdomen length; venter smooth, without longitudinal lines.

Male palp as illustrated (Figs. 5–7). Tibia with short retrolateral apophysis. Bulb ovoid in ventral view (Fig. 5), tegulum straight at base; sperm duct distinctive U-shaped, originating from upper part of tegulum; subtegulum relatively large (Fig. 6); embolus bent, long and thick, originating from prolateral-apical tegulum, extending beyond tegulum (Fig. 5); conductor apical, corn-flake shaped; median apophysis nearly rectangular from retrolateral view, on distal-retrolateral sector of tegulum.

**Distribution.** Presently known only from the type locality, Mt. Jianfengling, Hainan, China.

*Sphingius hainan* Zhang, Fu & Zhu, 2009
Figs. 8–13


**Diagnosis.** In comparing Chinese *Sphingius* species, such as *S. sinensis* (Schenkel, 1963) and *S. zhangi* Zhang, Fu & Zhu, 2009, with the female of *S. hainan*, we find the epigyne of *S. hainan* has a large anterior hood (Fig. 9) while *S. sinensis* with two small anterior hoods (Zhang et al. 2009: fig. 18); and additionally, the epigynal hood of *S. hainan* is half-oval shaped (Fig. 9), while *S. zhangi* has a hood nearly rectangle-shaped (Zhang et al. 2009: fig. 27).

**Table 1.** Leg measurements of *Sphingius deelemanae* sp. n., male.

<table>
<thead>
<tr>
<th></th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
<th>Total</th>
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<td>I</td>
<td>1.13</td>
<td>0.54</td>
<td>0.86</td>
<td>0.59</td>
<td>0.54</td>
<td>3.66</td>
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<tr>
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<td>0.45</td>
<td>0.72</td>
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<td>0.50</td>
<td>3.07</td>
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<td>0.59</td>
<td>0.40</td>
<td>0.54</td>
<td>0.70</td>
<td>0.67</td>
<td>2.90</td>
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<tr>
<td>IV</td>
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Figures 8–13. *Sphingius hainan* Zhang, Fu & Zhu, 2009. 8 Female body, dorsal view 9 Epigyne, ventral view 10 Vulva, dorsal view 11 Left male palp, prolateral view 12 Same, ventral view 13 Same, retrolateral. b bursa c conductor co copulatory opening e embolus h hood ma median apophysis s spermatheca sd sperm duct st subtegulum t tegulum ta tibial apophysis. Scale bars: 1 mm (8); 0.5 mm (9–13).
Comparing S. hainan with the seven Sphingius species with known females found in nearby south east Asian countries, S. hainan can be distinguished from S. penicillus (Thailand), by having a large anterior hood (Fig. 9) while S. penicillus with a small anterior hoods (Deeleman-Reinhold 2001: fig. 850). S. hainan is also very similar to S. vivax (Thorell, 1897) (Myanmar, Vietnam, Malaysia, Philippines) in the conformation of the male palpal organ, but can be distinguished from S. vivax by having a longer and thicker male palpal retrolateral tibial apophysis (Fig. 13), by the bulb with apical membranous conductor (Fig. 12), and by the shape of the median apophysis (Fig. 12). S. hainan can also be distinguished from S. songi (Thailand), S. gothicus (Thailand) and S. punctatus (Thailand, Indonesia), by having a half-oval shaped epigynal hood (Fig. 9) while epigynal hood M-shaped in S. songi, triangle-shaped in S. gothicus, and nearly rectangle-shaped in S. punctatus (Deeleman-Reinhold 2001: figs. 855, 845, 866). S. hainan can be distinguished from S. octomaculatus (Myanmar) and S. gracilis (Myanmar), by having a large anterior hood (Fig. 4) while the latter two without anterior hood (Deeleman-Reinhold 2001: figs. 861, 837).

Comparing S. hainan with the seven Sphingius species with known females found in nearby south east Asian countries, S. hainan can be distinguished from S. penicillus (Thailand), by having a large anterior hood (Fig. 9) while S. penicillus with a small anterior hood (Deeleman-Reinhold 2001: fig. 850). S. hainan can also be distinguished from S. songi (Thailand), S. gothicus (Thailand), S. vivax (Myanmar, Vietnam, Malaysia, Philippines) and S. punctatus (Thailand, Indonesia), by having a half-oval shaped epigynal hood (Fig. 9) while the epigynal hood rather ‘M-shaped’ in S. songi (Deeleman-Reinhold 2001: fig. 855), triangle-shaped in S. gothicus (Deeleman-Reinhold 2001: fig. 845), large and dome shaped in S. vivax (Deeleman-Reinhold 2001: fig. 842) and nearly rectangle-shaped in S. punctatus (Deeleman-Reinhold 2001: fig. 866 ). S. hainan can be distinguished from S. octomaculatus (Myanmar) and S. gracilis (Myanmar), by having a large anterior hood (Fig. 4) while the latter two without anterior hood (Deeleman-Reinhold 2001: figs. 861, 837).

**Description.** Female. Body length 5.00–5.53. One specimen was measured, total length 5.53: carapace 2.52 long, 2.07 wide; abdomen 3.01 long, 1.80 wide. Carapace ovoid in dorsal view (Fig. 8), deep reddish brown, with numerous small granulations, lateral and posterior margins with angular granulations. Eyes in two transverse rows; AER slightly recurved, PER straight or slightly recurved in dorsal view and longer than AER. Eye diameters: AME 0.13, ALE 0.12, PME 0.14, PLE 0.13. Eye interdistances: AME–AME 0.13, AME–ALE 0.19, PME–PME 0.50, PME–PLE 0.17; MOA 0.33 long, front width 0.29, back width 0.28. Chelicerae with three promarginal and two retromarginal teeth, anterior side with a tubercle. Endites brown, longer than wide, constricted at middle on lateral margin, anterior edge with clear serrula and scopula. Labium slightly rectangular, anterior margin with a slight concavity centrally. Sternum light brown, shield-shaped, covered with sparse granulations, posterior margin slightly extending between coxae IV, lateral margin with precoxal triangles and intercoxal sclerites. Space above the coxae and below the carapace with longitudinal, sclerotized pleural bars. Legs brown, anterior tibiae and metatarsi spineless, tarsi I–III almost as long as metatarsi. Leg spination: femora I-II with one small dorsal spines, tibia III v2-2-2, p 0-1-1, r 0-0-1; metatarsus III v 2-0-0; tibia IV v 1-1-1, p0-0-1, r 0-0-1, metatarsus IV p0-1-0, v 2-1-0, r 0-1-0. Leg formula: 4123 (Table 2).
Abdomen ovoid (Fig. 8), dark brown, light brown centrally; dorsal scutum covering nearly all, and dorsum with one pair of muscular impression on middle part. Venter of abdomen yellow brown, epigastric scutum tripartite (to some degree, at least in the color) divided into a central plate and two lateral plates, postgenital scutum relatively small, about two thirds of abdomen length, venter with two rows of longitudinal lines of spots.

Epigyne as illustrated (Figs. 9–10). Epigynal plate oval-rectangular, anterior half concave and posterior half convex. Anterior atrial hood arch-shaped (Fig. 9). Copulatory openings situated in the corners of the depression, leading through funnel-shaped ducts to the spermathecae and bursae. Spermathecae posteriorly (Fig. 10), large, globose; bursae anteriorly, smaller globose, thin-walled; a short connecting tube between the anterior bursa and posterior spermatheca.

Male (holotype). The male has been described by Zhang et al. (2009). Male palp as illustrated (Figs. 11–13).

**Distribution.** Hainan.

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**References**


