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# International Journal of Acarology

Publication details, including instructions for authors and subscription information: <u>http://www.tandfonline.com/loi/taca20</u>

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Xu Zhang <sup>a b</sup>, Dao-Chao Jin <sup>a</sup> & Jian-Jun Guo <sup>a</sup>

<sup>a</sup> The Provincial Key Laboratory for Agricultural Pest Management of Mountainous Region, Institute of Entomology, Guizhou University, 550025, Guiyang, PR China

<sup>b</sup> Anhui Key Laboratory of Plant Resources and Biology, Huaibei Normal University, 235000, Huaibei, PR China

Available online: 31 Jan 2012

To cite this article: Xu Zhang, Dao-Chao Jin & Jian-Jun Guo (2012): Descriptions of two new species of the genus Sperchon Kramer, 1877 (Acari: Hydrachnidia, Sperchontidae) from China, International Journal of Acarology, 38:1, 23-29

To link to this article: http://dx.doi.org/10.1080/01647954.2011.577452

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# Descriptions of two new species of the genus *Sperchon* Kramer, 1877 (Acari: Hydrachnidia, Sperchontidae) from China

Xu Zhang<sup>a,b</sup>, Dao-Chao Jin<sup>a\*</sup> and Jian-Jun Guo<sup>a</sup>

<sup>a</sup> The Provincial Key Laboratory for Agricultural Pest Management of Mountainous Region, Institute of Entomology, Guizhou University, 550025, Guiyang, PR China (emails: xuzhang03@hotmail.com, dcjin@gzu.edu.cn and jjgchsd@163.com); <sup>b</sup>Anhui Key Laboratory of Plant Resources and Biology, Huaibei Normal University, 235000, Huaibei, PR China

(Received 7 November 2010; accepted 17 March 2011)

Two new water mites species of the genus *Sperchon* Kramer, 1877 from China, *Sperchon synsetus* **sp. nov.** and *Sperchon xiaoqikongensis* **sp. nov.** are described and illustrated in this article. *Sperchon synsetus* **sp. nov.** differs from known species of the genus in the following: cuticle covered with very fine spinules arranged in polygonal pattern and each polygon with an annular line inside; two peg-like setae fused at the base on the ventral side of P-IV. *Sperchon xiaoqikongensis* **sp. nov.** is characterized by cuticle covered with scale-shaped papillae; P-II with an obtuse projection bearing three setae and A1 setae is plumose. To the present, 18 species of the genus *Sperchon* have been described from China.

Keywords: Hydrachnidia; Sperchontidae; Sperchon; new species; China

## Introduction

The genus *Sperchon* Kramer, 1877 is the most species-rich among all the genera in the family Sperchontidae Thor, 1900. It is widely distributed in the Holarctic, Oriental and Ethiopian regions (Cook 1974).

Up to now, only 16 species have been described from China (Jin 1997; Jin et al. 2010; Zhang and Jin 2010; Zhang et al. 2007; Zhang et al. 2010; Zhang et al. 2011): Sperchon beijingensis Zhang & Jin, 2010; Sperchon brevipalpis Jin, 1997; Sperchon curvipalpis Zhang & Jin, 2010; Sperchon fluviatilis Uchida, 1934; Sperchon garhwalensis Kumar, Kumar & Pesic, 2007; Sperchon gracilipalpis Lundblad, 1941; Sperchon heteropoda Zhang & Jin, 2010; Sperchon huangshanenses Zhang & Jin, 2010; Sperchon lanigerus Guo & Jin, 2011; Sperchon mirabilis Lundblad, 1941; Sperchon oligospinis Jin, 1997; Sperchon perspicuus Zhang & Jin, 2011; Sperchon placoderma Lundblad, 1967; Sperchon plumifer Thor, 1902; Sperchon rostratus Lundblad, 1968; Sperchon turfanensis Zhang & Jin, 2010. In this article, two new species, Sperchon synsetus sp. nov. and Sperchon xiaoqikongensis sp. nov., are described and illustrated, which brings the number of described species of Sperchon known from China to 18. All the type specimens are deposited in the Institute of Entomology, Guizhou University, China (GUGC).

#### Materials and methods

Specimens examined in this study were collected by the authors, during 1998–2002 from China (Yunnan Province, Gaoligongshan National Nature Reserve; Guizhou Province, Maolan National Nature Reserve), and preserved in Koenike's solution and dissected as described elsewhere (e.g. Cook 1974). Terms follow Jin (1997). The following abbreviations are used: A1, A2 – antennal glandularia 1 and 2; ACG – anterior coxal group (CxI + CxII); CxI–CxIV – coxae I–IV; D1–D4 – dorsoglandularia 1–4; E1–E4 – epimeroglandularia 1–4; L1–L4 – lateroglandularia 1–4; O1, O2 – ocularia 1 and 2; PCG – posterior coxal group (CxIII + CxIV); P-I–P-V – palpal segments 1–5; V1–V4 – venteroglandularia 1–4; I-L-1–II-L-6 – the first leg segments 1–6; III-L-1–III-L-6 – the third leg segments 1–6; and IV-L-1–IV-L-6 – the fourth leg segments 1–6.

The location of glandularia and ocularia are indicated in the figures. All measurements are given in micrometres.

#### Taxonomy

Family **Sperchontidae** Thor, 1900 Genus *Sperchon* Kramer, 1877 *Sperchon synsetus* **sp. nov.** Zhang and Jin (Figures 1–10)

#### Type series

Holotype: male, China, Yunnan Province, Tengchong Country, Gaoligongshan National Nature Reserve, unnamed stream (N25°58′57″, E98°49′03″), 19 July 2002, leg. Jian-Jun Guo. Paratypes: two females, the same data as the holotype. All were dissected and slide mounted.

<sup>\*</sup>Corresponding author.



Figures 1-4. Sperchon synsetus sp. nov. Male: 1. idiosoma, dorsal view; 2. idiosoma, ventral view; 3. A1; 4. decorations of cuticle.

#### Diagnosis

Cuticle covered with very fine spinules arranged in polygonal pattern, each polygon with an annular line inside; two peg-like setae fused at the base of the ventral side of P-IV; A1 setae are plumose.

## Description

*Male*. Idiosoma oval, 680 in length, 559 in width. Cuticle light yellow, soft and covered with very fine spinules arranged in polygonal pattern, and each polygon with an annular line inside (Figure 4). A1 setae are relatively short and plumose (Figure 3), setae of other glandularia smooth and relatively long. Chitinous plates and glandularia plates on both dorsum and venter as shown in Figures 1 and 2. Six pairs of plates on dorsum. Coxae in four groups. Surface of coxae punctate. ACG 180 in length, close to each other but not fused, apodemes well developed. E2 on the lateral interval between ACG and PCG. PCG 210 in length, widely separated. Glandularia absent from PCG. Distance between anterior end of ACG and posterior end of PCG 399. Genital field between PCG, 183 in length and 148 in width. A rounded platelet in front of genital field. Preand postgenital sclerites undeveloped. Genital valves not covering the genital acetabula when closed. No obvious difference in size, but anterior two pairs of acetabula elliptic and posterior pair more or less rounded. V1 without accompanying pore opening, but with very small sclerites. Genital-anal area of the venter with a single ventral platelet between genital field and V1, and three pairs of ventralia between V1 and excretory pore. Excretory pore surrounded by a sclerotized ring. Capitulum with short rostrum, length 194. Chelicera total length 194, basal segment length 142, claw length 72, ratio of basal segment/claw length 2.0. Dorsal lengths of the palpal segments: P-I, 23; P-II, 92; P-III, 125; P-IV, 144; P-V, 37. P-II with a long ventrodistal projection bearing one long and one short seta, about 11 small setae on the lateral and dorsal side of P-II, 10 of them feathered. P-III with six small feathered setae on the lateral and dorsal sides. P-IV ventral margin with



Figures 5–8. Sperchon synsetus sp. nov. Male: 5. IV-L-1-6; 6. claw; 7. capitulum and chelicera; 8. palp.



Figures 9-10. Sperchon synsetus sp. nov. Female: 9. idiosoma, dorsal view; 10. idiosoma, ventral view.



Figures 11–14. Sperchon xiaoqikongensis **sp. nov.** Male: 11. idiosoma, dorsal view; 12. idiosoma, ventral view; 13. decorations of cuticle; 14. A1.

two small peg-like setae fused at the base. Dorsal lengths of the first leg: I-L-1, 44; I-L-2, 44; I-L-3, 87; I-L-4, 92; I-L-5, 93; I-L-6, 126. Dorsal lengths of the fourth leg: IV-L-1, 88; IV-L-2, 112; IV-L-3, 123; IV-L-4, 237; IV-L-5, 235; IV-L-6, 188. Fourth legs with a few short setae, some of which are plumose (Figure 5). Claw with weakly protruding claw blade and two clawlets, of which one is much shorter than the other (Figure 6).

*Female.* Similar to male except in characteristics of the genital field, the shape of ACG and the size of dorsalia and ventralia (Figures 9 and 10). Idiosoma length 905 (942), width 725 (736). ACG 240 (246) in length, with welldeveloped apodemes. PCG 248 (259) in length. Distance between anterior end of ACG and posterior end of PCG 377 (382). Genital field 207 (218) in length, 146 (169) in width. Pre- and postgenital sclerites well developed. Capitulum length 266 (278). Chelicera total length 279 (296), basal segment length 189 (200), claw length 90 (96), ratio of basal segment/claw length 2.1. Dorsal lengths of the palpal segments: P-I, 22 (23); P-II, 127 (130); P-III, 144 (152); P-IV, 154 (167); P-V, 32. Dorsal lengths of the first leg: I-L-1, 56 (64); I-L-2, 57 (68); I-L-3, 99 (107); I-L-4, 155 (170); I-L-5, 156 (178); I-L-6, 80 (92). Dorsal lengths of the fourth leg: IV-L-1, 93 (98); IV-L-2, 91 (101); IV-L-3, 139 (148); IV-L-4, 268 (296); IV-L-5, 249 (261); IV-L-6, 159 (163).

#### Remarks

Many of the known species in the genus *Sperchon* Kramer, 1877, especially the subgenus *Hispidosperchon* Thor, 1901, have a similar cuticle. Generally, the cuticle is covered with fine spinules arranged in polygonal pattern, whereas in the new species, the cuticle is covered not only with spinules in polygonal pattern, but also with an annular line inside each polygon. It is a notable character in the new species. In having glandularia absent from PCG, P-II with a long ventrodistal projection and the two peg-like setae on the ventral side of P-IV close to each other, the new species is similar to *Sperchon afzalipouri* Bader & Sepasgozarian, 1979 (Esen et al. 2010) described from Iran. However,



Figures 15–18. Sperchon xiaoqikongensis sp. nov. Male: 15. IV-L-1-6; 16. claw; 17. capitulum and chelicera; 18. palp.

these two species differ in their fourth legs, with these appendages bearing plumose setae in the new species and smooth setae in *S. afzalipouri*.

*Sperchon synsetus* is also similar to *Sperchon ivonae* Pesic & Gerecke, 2008 (Pesic and Gerecke 2008) described from India, from which it is easily distinguishable by P-IV, in which the two peg-like setae are close to each other in *S. synsetus* but far away from each other in *S. ivonae*.

# Etymology

Named after the fused two peg-like setae on the venter of P-IV.

#### Sperchon xiaoqikongensis sp. nov. Zhang & Jin (Figures 11–20)

# Type series

Holotype: male, China, Guizhou Province, Libo County, Maolan National Nature Reserve, Xiaoqikong area, unnamed stream  $(25^{\circ}15'43''N, 107^{\circ}45'10''E)$ , altitude, 700 m, 30 May 1998, leg. Jian-Jun Guo. Paratypes: two females, the same data as the holotype. All were dissected and slide mounted.

## Diagnosis

Cuticle covered with scale-shaped papillae; P-II with an obtuse projection bearing three setae; A1 setae plumose.

#### Description

*Male.* Idiosoma oval, 985 in length, 816 in width. Cuticle soft, almost colourless and covered with scale-shaped papillae as shown in Figure 13. A1 setae plumose (Figure 14), setae of other glandularia smooth and long. All glandularia with rather large pore openings. No chitinous plate on dorsum and venter (Figures 11 and 12). Coxae in four groups. Surface of coxae punctate. ACG 286 in length, close to each other but not fused. Anterior margin of CxI slightly



Figures 19-20. Sperchon xiaoqikongensis sp. nov. Female: 19. idiosoma, dorsal view; 20. idiosoma, ventral view.

emarginated. E2 on the lateral interval between ACG and PCG. PCG 247 in length, widely separated. Glandularia absent from PCG. ACG and PCG more or less triangular. Distance between anterior end of ACG and posterior end of PCG 585. Genital field between PCG, length 245, width 186. Genital valves not covering the genital acetabula when closed, all three pairs of acetabula somewhat oval. V1 without accompanying pore opening and sclerotized base. Excretory pore surrounded by poorly developed ring-like sclerite. Capitulum with long rostrum, length 294. Chelicera total length 271, basal segment length 210, claw length 61, ratio of basal segment/claw length 3.4. Dorsal lengths of the palpal segments: P-I, 15; P-II, 110; P-III, 122; P-IV, 138; P-V, 33. P-I short and without seta. P-II with an obtuse projection bearing three heavy setae, the shortest one much thicker than the other two. Seven small smooth setae on the lateral and dorsal side of P-II. P-III with an empty ventral side but with nine setae on the lateral and dorsal side. Distal one-third of P-IV with two peg-like setae and two hair-like setae on the ventral side; the two peglike setae differ in size, with the proximal one a little larger than the distal one. Dorsal lengths of the first leg segments: I-L-1, 72; I-L-2, 83; I-L-3, 149; I-L-4, 217; I-L-5, 200; I-L-6, 152. Dorsal lengths of the fourth leg segments: IV-L-1, 89; IV-L-2, 113; IV-L-3, 176; IV-L-4, 290; IV-L-5, 298; IV-L-6, 252. Fourth legs with a few short setae, some of which are plumose (Figure 15). Claw with well-protruding claw blade and two clawlets (Figure 16).

Female. Colour, body shape and cuticle structure as male. Idiosoma length 924 (942), width 699 (706). ACG 250 (262) in length. PCG 328 (341) in length. Distance between anterior end of ACG and posterior end of PCG 569 (577). Genital field 312 (281) in length, 246 (269) in width. Preand postgenital sclerites developed (Figure 20). Capitulum length 340 (356). Chelicera total length 365 (381), basal segment length 284 (296), claw length 81 (85), ratio of basal segment/claw length 3.5. Dorsal lengths of the palpal segments: P-I, 20 (22); P-II, 147 (157); P-III, 166 (174); P-IV, 183 (194); P-V, 57 (62). Dorsal lengths of the first leg segments: I-L-1, 74 (76); I-L-2, 89 (90); I-L-3, 180 (199); I-L-4, 256 (270); I-L-5, 184 (203); I-L-6, 214 (217). Dorsal lengths of the fourth leg segments: IV-L-1, 129 (134); IV-L-2, 150 (163); IV-L-3, 184 (209); IV-L-4, 391 (418); IV-L-5, 326 (349); IV-L-6, 285 (295).

#### Remarks

On the basis of the scale-shaped papillae of cuticle, the new species is similar to *Sperchon ezoensis* Imamura, 1954 (Imamura 1954), *Sperchon sounkyo* Imamura, 1954 (Imamura 1954), *Sperchon lepidophorus* Lundblad, 1941 (Lundblad 1967) and *Sperchon bakeri* Pesic & Panesar, 2009 (Pesic and Panesar 2009). However, the new species differs from the above species in the palp. P-II has an obtuse ventrodistal projection in the new species, but has a long and cuspate ventrodistal projection in other four species. Furthermore, the location of the two peg-like setae on P-IV is different: almost in the distal one-third of P-IV in the new species but half-way along the segment in *S. lepidophorus* and *S. bakeri*, in the basal one-third in *S. ezoensis* and *S. sounkyo*.

Etymology

The species is named after the area where it was collected.

#### Acknowledgements

We are very grateful to Dr. Vladimir Pesic (Department of Biology, University of Montenegro) and Dr. Hai-Jun Zhang (Wayne State University) for providing literature and Dr. Tian-Ci Yi (Guizhou University, China) for his help in many ways. This study was funded by the National Science Foundation of China (No. 30840021 and 30570217).

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