

CORRESPONDENCE

Wandesia (*s. str.*) *boyani* Li & Guo, sp. nov., a new species representing a newly recorded subfamily Wandesiinae Schwoerbel, 1961 from China

Haitao Li, Xinyao Gu, Daochao Jin, Jianjun Guo*

Institute of Entomology, Guizhou University, Guizhou Provincial Key Laboratory for Agricultural Pest Management of the Mountainous Region, Scientific Observing and Experimental Station of Crop Pests in Guiyang, Ministry of Agriculture and Rural Affairs of the People's Republic of China, Guiyang 550025, P. R. China.

*Corresponding author, E-mail: jjguo@gzu.edu.cn

Abstract A new species, *Wandesia* (*s. str.*) *boyani* Li & Guo, **sp. nov.**, is described and illustrated in detail, which is collected from Qinghai-Tibet plateau, P.R. China, and represents a newly recorded subfamily Wandesiinae (Acari: Hydrachnidia: Hydryphantidae) to Chinese fauna. The new species is distinguished from its congeners by having stalked acetabula ranged triangularly, developed pregenital sclerite lily-like, E_4 at the middle of Ac-1 and Ac-2.

Key words Taxonomy, water mite, new species, new record, Sichuan.

Wandesiinae Schwoerbel, 1961 (Acari: Hydrachnidia: Hydryphantidae) is a special group with very soft and extremely long and narrow body, and contains two genera, *Wandesia* Schechtel, 1912 and *Euwandesia* André & Naudo, 1962 (Cook, 1974; Gerecke & Cook, 1995). *Wandesia* is widely distributed in all zoogeographic regions, typically in interstitial waters. It originally included five subgenera in Cook's taxonomic system, but he questioned the status of the subgenus *Allowandesia* Schwoerbel, 1961 because of the scarcity of specimens (Cook, 1974). By further study, *Allowandesia* was considered as a junior synonym of *Wandesia* (*s. str.*) by Gerecke (1999). Recently, two species, *W. (s. str.) pelipoda* Gerecke, 2020 and *W. (s. str.) anjzorobica* Gerecke, 2020 from Madagascar, bridged the gap previously assumed to separate the subgenus *Pseudowandesia* from *Wandesia* (*s. str.*), which led to the synonymization of the subgenus *Pseudowandesia* (Gerecke, 2020). Up to now, there are 43 species in three subgenera in the genus, *Wandesia* (*s. str.*) (35 species), *Mesowandesia* (one species) and *Partnuniella* (seven species), are known around the world (Cook, 1986, 1988; Viets, 1987; Gerecke, 1991, 1996, 1999, 2020; Abé, 2010; Pešić *et al.*, 2010; Smit, 2013; Semenchenko, 2016; Pešić & Smit, 2018).

During a field survey of water mites from Qinghai-Tibet plateau, P.R. China, a new species was collected representing the newly recorded subfamily Wandesiinae and genus *Wandesia* to the Chinese fauna.

A 250 µm mesh size net, two stacked sieves (mesh size 4 mm above, 250 µm below), a dropper and a white tray were used to capture water mites. Specimens were preserved in Koenike's fluid and mounted in gelatin mounting fluid (gelatin 8–10 g, phenol 0.8 g, glycerin 50 ml, distilled water 50 ml) (Jin, 1997)

Specimens were observed and illustrated under a Leica DM3000 microscope, and the illustrations were edited with Adobe Photoshop CS6®. Specimens were measured using Nikon DS-Ri2 (Gu *et al.*, 2020). All measurements are given in µm. Type specimen is deposited in the Institute of Entomology, Guizhou University, Guiyang, P. R. China (GUGC).

The abbreviations are used as following:

A_1 —preantennal glandularia;

A_2 —postantennal glandularia;

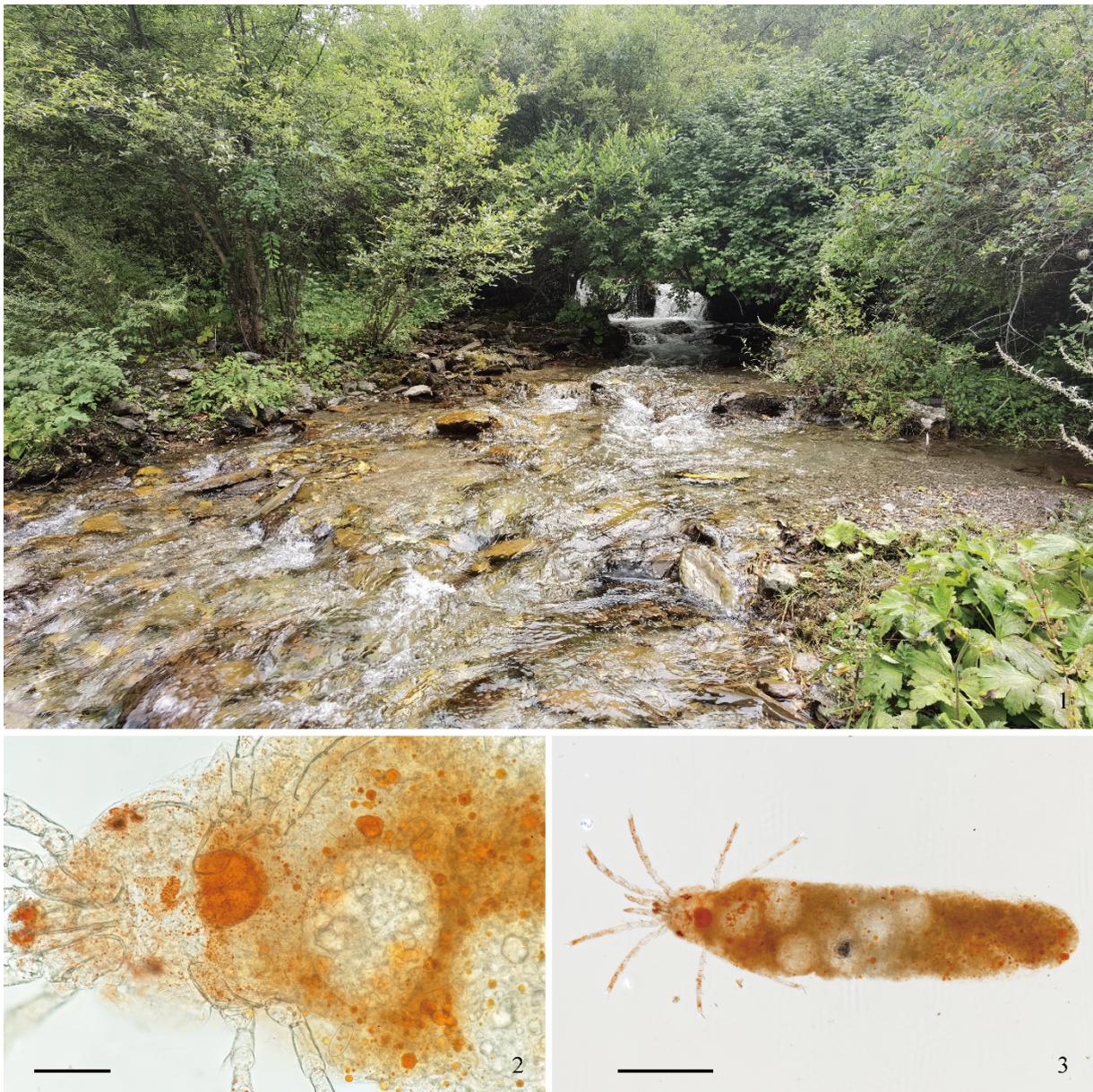
ACG—anterior coxal group (Cx-I+Cx-II);

urn:lsid:zoobank.org:pub:2FD04A04-DA75-456B-85D1-29B555FE0EE5

Received 6 November 2020, accepted 25 February 2021

Executive editor: Fuqiang Chen

Ac-1-3—acetabula 1-3;
 Cx-I-IV—coxae I-IV;
 D_1 - D_4 —dorsoglandularia 1-4;
 dL—dorsal length;
 E_1 - E_4 —epimeroglandularia 1-4;
 I-L-1-6, *etc.*—first–sixth segment of the first leg, *etc.*;
 L—length;
 L_1 - L_4 —lateroglandularia 1-4;
 O_1 —preocularia;
 O_2 —postocularia;
 P-1-P-5—first–fifth segment of palp;
 PCG—posterior coxal group (Cx-III+Cx-IV);
 V_1 - V_4 —ventroglandularia 1-4;
 W—width.



Figures 1–3. *Wandesia (s. str.) boyani* Li & Guo, **sp. nov.**, female, holotype. 1. Habitat; 2. Ventral view of fixed specimen (anterior idiosoma); 3. Dorsal view of fixed specimen. Scale bars: 2 = 100 μ m; 3 = 500 μ m.

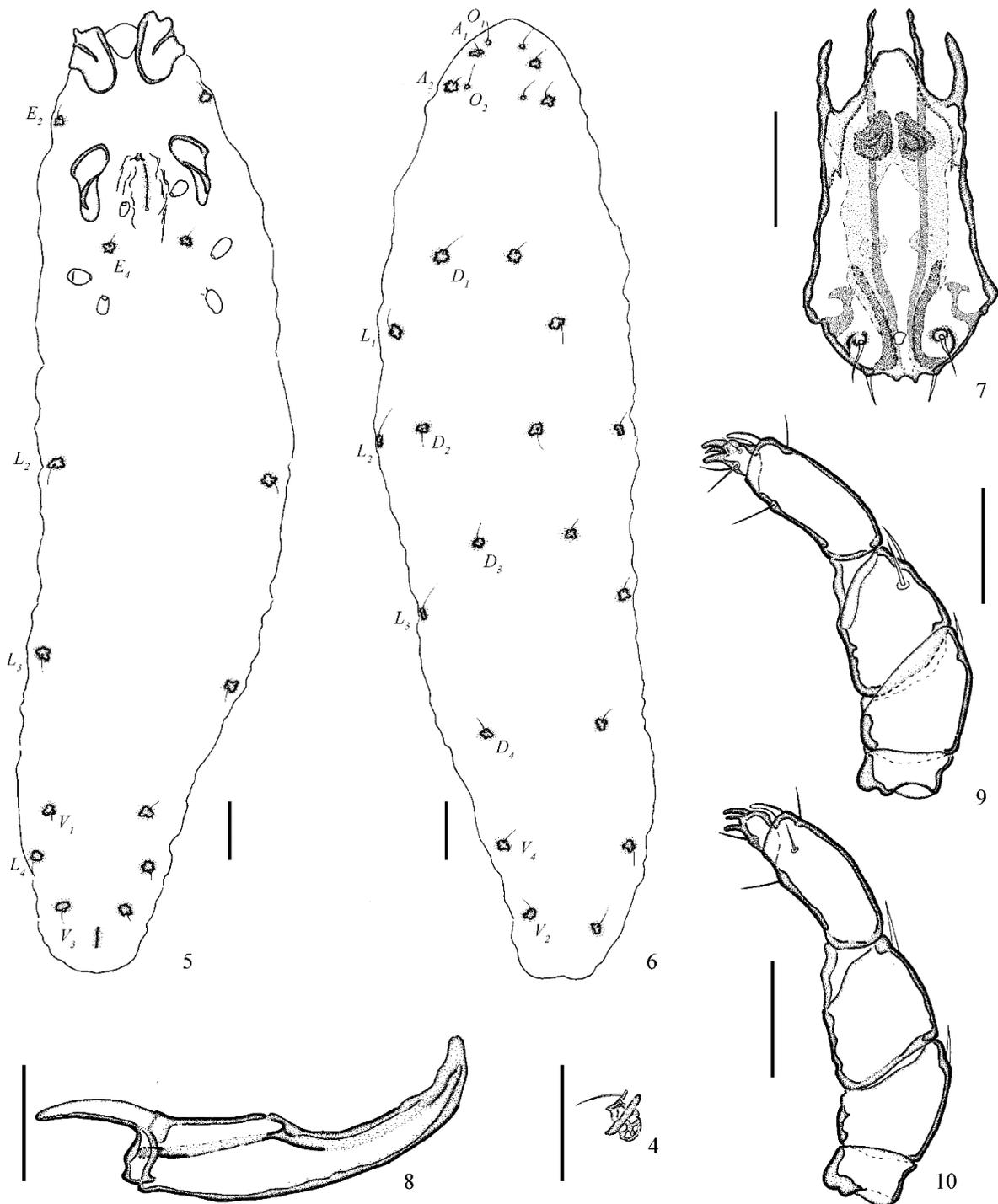
Family Hydryphantidae Thor, 1900

Subfamily Wandesiinae Schwoerbel, 1961

Genus *Wandesia* Schechtel, 1912

***Wandesia (Wandesia) boyani* Li & Guo, sp. nov.** (Figs 1–15)

Type material. Holotype ♀, Chaqingsongduo National Nature Reserve, Sichuan Province, P. R. China (31°00'88"N, 99°24'71"E; elev. 3523 m), water depth 30–40 cm, located at the hillside, running water with organic detritus, dead wood



Figures 4–10. *Wandesia (s. str.) boyani* Li & Guo, **sp. nov.**, female, holotype. 4. Gland, lateral view; 5. Idiosoma, ventral view; 6. Idiosoma, dorsal view; 7. Infracapitulum, ventral view; 8. Chelicera; 9. Palp, outer side; 10. Palp, inner side. Scale bars: 4, 7–10= 50 µm; 5–6=100 µm.

and leaves on the bottom, coll. Boyan Li, 30.VIII.2020, slides no. SC-HY-20200801.

Diagnosis. The species can be distinguished by: idiosoma extremely soft and transparent; A_2 on the same level with O_2 ; P-IV distal extension appearing much like a heavy seta; P-V with one ventral seta and two setae on outer side; ACG rounded at posterolateral corner; Cx-I with three setae, downmost seta on the same level with ACG suture endpoint; Cx-IV reduced, and separated from the neighboring seta; three pairs of acetabula with short stalks, and arranged triangularly on each side, and Ac-2 closer to Ac-3 than to Ac-1; pregenital sclerite lily-shaped; E_4 in the middle of Ac-1 and Ac-2.

Description. Female (SC-HY-20200801). Red in colour, body much elongated; idiosomal integument extremely soft and transparent; dorsum without sclerites; pigmented eyes present below the integument; gland spherical, glandular integument mesh-bag-shaped (Fig. 4), glandular sclerite weakly sclerotized, without well-defined borders (Fig. 5); A_2 on the same level with O_2 (Fig. 6).

Infracapitulum with two pairs of setae at rostrum (Fig. 7). Chelicera two-segmented, chelicera claw dentate (Fig. 8). Palp five-segmented; P-I without seta; P-II with one dorsodistal seta; P-III with one dorsal seta and one seta on outer side; P-IV with one dorsal, one ventral setae, and one seta on inner side, distal extension appearing much like a heavy seta; P-V with a three-branched claw at the distal end, one ventral and two setae on outer side (Figs. 9–10).

ACG rounded at posterolateral corner, suture half the length of ACG; Cx-I with three setae, downmost seta on the same level with suture endpoint; Cx-II without seta; Cx-III with one premedial seta; Cx-IV reduced, and separated from the neighboring seta; E_2 at the middle of coxae (Fig. 11).

Genital field with three pairs of acetabula with short stalks, and arranged triangularly on each side; Ac-1 on two flanks

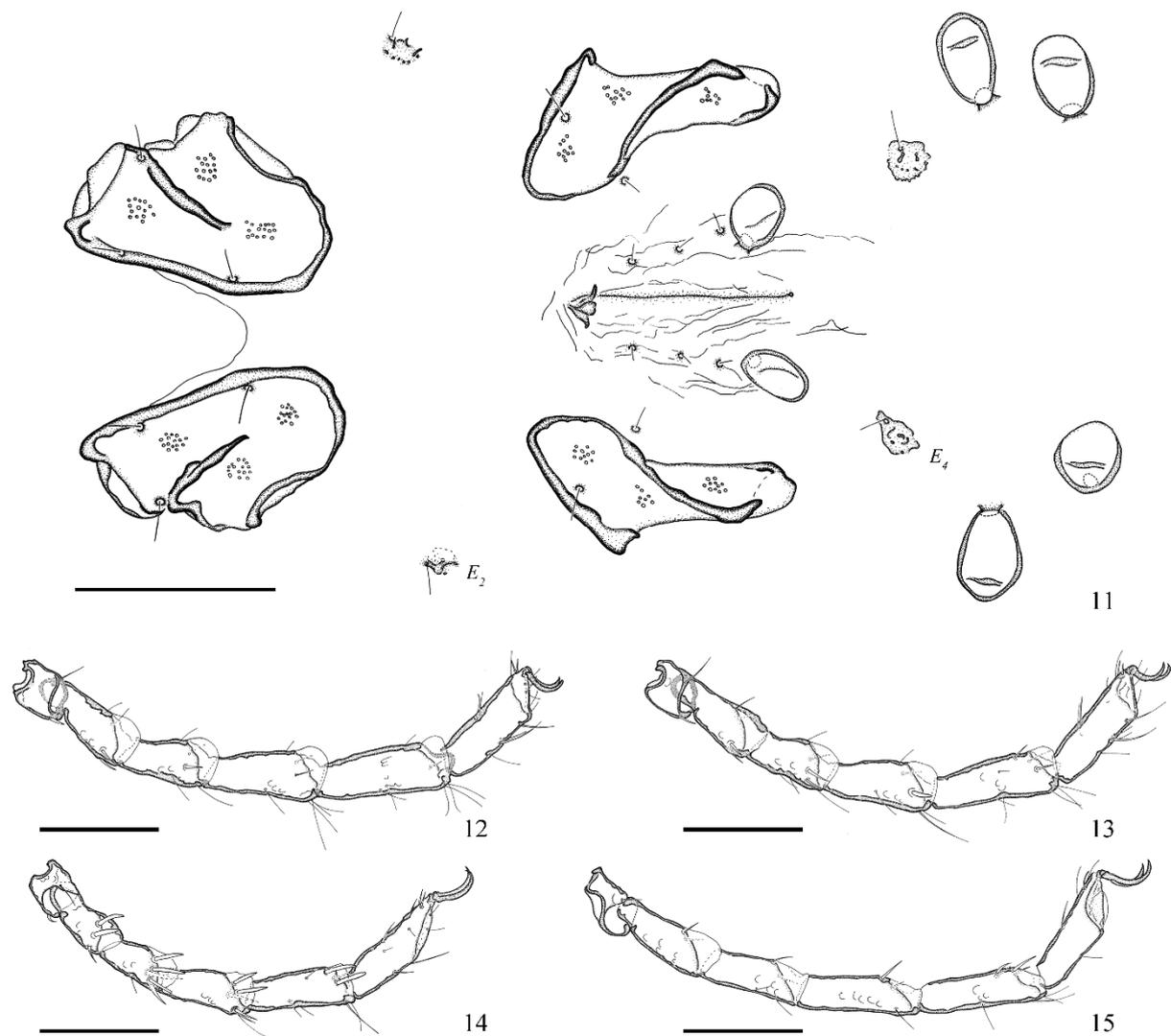


Figure 11–15. *Wandesia (s. str.) boyani* Li & Guo, **sp. nov.**, female, holotype. 11. Coxae and genital field; 12. I-L-1–6; 13. II-L-1–6; 14. III-L-1–6; 15. IV-L-1–6. Scale bar = 100 μ m.

of posterior gonopore, Ac-2 closer to Ac-3 than to Ac-1; pregenital sclerite lily-shaped, postgenital sclerite reduced; three pairs of setae on each side of gonopore; E_4 in the middle of Ac-1 and Ac-2 (Fig. 11).

Legs without swimming setae; III-L-2–5 with two rough setae ventrally, respectively; all claws simple (Fig. 12–15).

Male. Unknown.

Measurements (holotype). Idiosoma L 2395, W 355; Gland L 16, W 20; infracapitulum L 165, W 70; chelicera base segment L 125, W 36, claw L 55; palp dL/W, dL/W ratio: P-I 20/35, 0.57; P-II 54/45, 1.20; P-III 47/42, 1.12; P-IV 67/28, 2.39; P-V 18/12, 1.5; P-IV distal extension L 15; ACG L 122, W 94; PCG L 125, W 74; Ac-1 L/W, L/W ratio: Ac-1 37/22, 1.68; Ac-2 48/25, 1.92; Ac-3 54/31, 1.74; leg segment dL (W): I-L-1 43 (39), I-L-2 75 (34), I-L-3 73 (32), I-L-4 90 (37), I-L-5 106 (36), I-L-6 88 (35), claw dL 33; II-L-1 43 (36), II-L-2 90 (35), II-L-3 76 (38), II-L-4 94 (38), II-L-5 109 (40), II-L-6 87 (34), claw dL 35; III-L-1 40 (36), III-L-2 64 (29), III-L-3 59 (29), III-L-4 78 (30), III-L-5 89 (31), III-L-6 73 (27), claw dL 32; IV-L-1 54 (35), IV-L-2 88 (35), IV-L-3 85 (31), IV-L-4 102 (28), IV-L-5 110 (28), IV-L-6 78 (33), claw dL 37.

Etymology. The new species is named after the collector, Boyan Li.

Remarks. So far, 35 species in the subgenus *Wandesia* are recorded worldwide. Therein, acetabula of 18 species are with obviously stalked structure. The present new species is similar to *W. (s. str.) extendens* Cook, 1974 and *W. (s. str.) albertii* Pešić & Smit, 2018 from America and Kyrgyzstan in the shapes of palps and epimera. It is different from *W. extendens* in the following aspects: (1) acetabula L 37–54 in the new species, but 24–38 in *W. extendens*; (2) Ac-2 closer to Ac-3 than to Ac-1, 3 acetabula ranged triangularly per side in the new species; while Ac-2 in the middle of Ac-1 and Ac-3, acetabula ranged in linear in *W. extendens*; (3) pregenital sclerite lily-shaped in the new species, but rounded in *W. extendens*; (4) Cx-III with seta in the anterior part in the new species, while in the middle in *W. extendens* (Cook, 1974). The new species is also distinguished from *W. albertii* by: (1) idiosoma L 2395 in the new species, but 1500 in *W. albertii*; (2) P-IV L/H ratio 2.39 in the new species, while 3.7 in *W. albertii*; (3) 3 pairs of setae around gonopore in the new species, but no visible setae in *W. albertii*; (4) Ac-1 at the posterior of gonopore in the new species, while in the middle in *W. albertii*; (5) E_4 beneath the gonopore in the new species, but at the posterior of gonopore in *W. albertii* (Pesic & Smit, 2018).

Funding This research was supported by National Natural Science Foundation of China (31772421, 31750002), Guizhou Science and Technology Project (Qiankehe Pingtai Rencai [2017] 5788).

Acknowledgements We are indebted to Dr. Reinhard Gerecke (Department of Evolution and Ecology, Auf der Morgenstelle 28E, DE 72076 Tübingen, Germany) for providing literature. Furthermore, we are grateful to Boyan Li (Institute of Entomology, Guizhou University, P. R. China) for collecting of the specimen.

References

- Abé, H. 2010. A new species of *Wandesia* (Acari, Hydrachnidia) from Siberian Arctic Coast. *Journal of the Acarological Society of Japan*, 19(1): 1–7.
- Cook, D.R. 1974. Water mite genera and subgenera. *Memoirs of the American Entomological Institute*, 21: VII+1–860.
- Cook, D.R. 1986. Water mites from Australia. *Memoirs of the American Entomological Institute*, 40: IV+1–568.
- Cook, D.R. 1988. Water mites from Chile. *Memoirs of the American Entomological Institute*, 42: 1–356.
- Gerecke, R. 1991. Taxonomische, faunistische und ökologische Untersuchungen an Wassermilben (Acari, Actinedida) aus Sizilien unter Berücksichtigung anderer aquatischer Invertebraten. *Lauterbornia*, 7: 1–304.
- Gerecke, R. 1996. Untersuchungen über die Wassermilben der Familie Hydryphantidae (Acari, Actinedida) in der Westpalaearkt. II. Die Wassermilben der Familie Hydryphantidae in den Mittelmeerländern-Systematik, Faunistik, Zoogeographie. *Archiv für Hydrobiologie, Supplements*, 77(3/4): 337–513.
- Gerecke, R. 1999. Further studies on hydryphantoid water mites (Acari Hydrachnidia) in the W palaeartic region. *Archiv für Hydrobiologie, Supplements*, 121/2: 119–158.
- Gerecke, R. 2020. The early derivative water mites (Acari: Hydrachnidia, superfamilies Eylaoidea, Hydrachnoidea and Hydryphantoidea) of Madagascar. *Zootaxa*, 4727(1): 1–77.
- Gerecke, R., Cook, D.R. 1995. Morphology, systematic position and zoogeography of *Parawandesia chappuisi* E. Angelier, 1951 (Acari, Actinedida, Piersigiidae). *Zoologischer Anzeiger*, 234: 125–131.
- Gu, X.Y., Jin, D.C., Guo, J.J. 2020. New water mites of Torrenticolidae (Acari, Hydrachnidia) from Jiangxi Province, P. R. China. *Acarologia*, 60(2): 488–500.
- Jin, D.C. 1997. *Hydrachnellae-Morphology Systematics a Primary Study of Chinese Fauna*. Guizhou Science and Technology Publishing House, Guiyang. 356pp.

- Pešić, V., Chatterjee, T., Herrera-Martínez, Y., Herrando-Pérez, S. 2010. *Wandesia (Partnuniella) lehmanni* - a new water mite species (Acari: Hydrachnidia, Hydryphantidae) from a high-altitude lake in the Columbian Andes. *International Journal of Acarology*, 36(1): 53–58.
- Pešić, V., Smit, H. 2018. A checklist of the water mites of Central Asia with description of six new species (Acari, Hydrachnidia) from Kyrgyzstan. *Acarologia*, 58(1): 165–185.
- Semenchenko, K.A. 2016. New water mites species (Acariformes: Hydrachnidia) from interstitial waters of the Russian Far East. *Zootaxa*, 4097(4): 545–556.
- Smit, H. 2013. Three new hyporheic water mite species from Australia (Acari: Hydrachnidia). *Subterranean Biology*, 10: 37–42.
- Viets, K.O. 1987. Die Milben des Süßwassers (Hydrachnellae und Halacaridae (part.), Acari). II.: Katalog. *Sonderbände des Naturwiss. Vereins Hamburg*, 8: 1–1012.