



Remarks on the genus *Phlugiolopsis* and six synonyms (Tettigoniidae: Meconematinae) in China

FUMING SHI^{1*}, MENGJIA ZHENG^{1,2} & JIE SU^{1,3}

¹Key Laboratory of Zoological Systematics and Application of Hebei Province, College of Life Sciences, Hebei University, 071002, Baoding, P. R. China

²ZhengMJ0920@qq.com; <https://orcid.org/0009-0000-3752-2097>

³iamyushikai@163.com; <https://orcid.org/0009-0003-1620-9300>

*Corresponding author: shif_m@126.com; <https://orcid.org/0000-0002-4885-9012>

The authors check the type specimens and some other specimens, and then propose six synonyms of *Phlugiolopsis* spp. in China. All examined specimens are preserved in the Museum of Hebei University.

Key words: Tettigoniidae, Meconematinae, *Phlugiolopsis*, synonym, China

Zeuner (1940) established the genus *Phlugiolopsis* in England. The *Phlugiolopsis* spp. are distributed in Vietnam, Japan, Thailand, Indonesia and China, 60 of which are recorded in China (Cigliano *et al.* 2024). We examined the type specimens in collection and the topotypes and other specimens, six synonyms of the genus *Phlugiolopsis* spp. are proposed, i.e. *Phlugiolopsis cangyuanensis* Pan, Pang & Bian, 2024 **syn. nov.** (= *Phlugiolopsis punctata* Wang, Li & Liu, 2012), *Phlugiolopsis curviproceris* Pan, Pang & Bian, 2024 **syn. nov.** (= *Phlugiolopsis breviproceris* Zheng, Shi & Chang, 2023), *Phlugiolopsis heterotrullis* Pan, Ran & Bian, 2024 **syn. nov.** (= *Phlugiolopsis acuta* Zheng, Su & Shi, 2024), *Phlugiolopsis cryphiconica* Pan, Ran & Bian, 2024 **syn. nov.** (= *Phlugiolopsis furcicaudis* Zheng, Shi & Chang, 2023), *Phlugiolopsis puerensis* Pan, Ran & Bian, 2024 **syn. nov.** (= *Phlugiolopsis latusiprocera* Bian & Shi, 2018) and *Phlugiolopsis platycercis* Pan, Ran & Bian, 2024 **syn. nov.** (= *Phlugiolopsis huangi* Bian, Shi & Chang, 2012).

Phlugiolopsis punctata Wang, Li & Liu, 2012

Phlugiolopsis punctata Wang, Li & Liu, 2012: 36; Zheng, Su & Shi, 2024: 41; Pan, Pang & Bian, 2024: 145. Type locality: Nabanhe, Yunnan.

Phlugiolopsis (Tribbranchis) punctata: Bian & Shi, 2018: 350.

Phlugiolopsis cangyuanensis Pan, Pang & Bian, 2024: 147. **syn. nov.**

Material examined. Specimens collected from the type locality: 1♂1♀, Banggang, Menghai, Yunnan, 16 August, 2023, coll. Jie Su and Sheng Gao; 1♂3♀, Banggang, Menghai, Yunnan, 15 August, 2023, coll. Jie Su and Sheng Gao. Other specimens: 1♂, Guomenshan, Menghai, Yunnan, 12 August, 2023, coll. Jie Su; 1♂1♀, Guomenshan, Menghai, Yunnan, 13 August, 2023, coll. Jie Su; 1♀, Mengsong, Menghai, Yunnan, 15 August, 2019, coll. Qidi Zhu; 1♀, Mengsong, Menghai, Yunnan, 16 August, 2019, coll. Yun Li; 1♂, Mengsong, Menghai, Yunnan, 17 August, 2019, coll. Qidi Zhu; 1♂3♀, Mengsong, Menghai, Yunnan, 18 August, 2019, coll. Qidi Zhu and Yun Li; 2♂1♀, Jingfu, Jingdong, Yunnan, 14 August, 2020, coll. Peng Cui; 1♂7♀, Wuliangshan, Jingdong, Yunnan, 14 August, 2020, coll. Peng Cui; 2♂, Wuliangshan, Jingdong, Yunnan, 18 August, 2022, coll. Yanhao Duan and Jie Su; 1♀, Wuliangshan, Jingdong, Yunnan, 19 August, 2022, coll. Yanhao Duan.

Discussion. After examining the specimens collected from the type locality and adjacent localities carefully, we propose that *Phlugiolopsis cangyuanensis* Pan, Pang & Bian, 2024 is a synonym of *Phlugiolopsis punctata* Wang, Li & Liu, 2012.

***Phlugiolopsis breviproceris* Zheng, Shi & Chang, 2023**

Phlugiolopsis breviproceris Zheng, Shi & Chang, 2023: 70; Zheng & Shi, 2024: 159; Pan, Pang & Bian, 2024: 150. Type locality: Malipo, Yunnan.

Phlugiolopsis curviproceris Pan, Pang & Bian, 2024: 141. **syn. nov.**

Material examined. Holotype: ♂, Laoshan, Malipo, Yunnan, 30 July, 2021, coll. Qi Guo. Other material: 3♂1♀, Laoshan, Malipo, Yunnan, 30 July, 2021, coll. Qi Guo and Yanhao Duan; 1♂, Daweishan, Pingbian, Yunnan, 8 August, 2021, coll. Qi Guo; 1♀, Bozhushan, Wenshan, Yunnan, 19 July, 2021, coll. Yanhao Duan; 1♂, Dulong, Maguan, Yunnan, 24 July, 2017, coll. Yongxia Wu; 5♂3♀, Jinchang, Maguan, Yunnan, 26 July, 2017, coll. Yongxia Wu and Yujie Dou.

Discussion. We examined the type specimen of *Phlugiolopsis breviproceris* Zheng, Shi & Chang, 2023 and the topotypes. *Phlugiolopsis curviproceris* Pan, Pang & Bian, 2024 is here proposed as a synonym of *Phlugiolopsis breviproceris* Zheng, Shi & Chang, 2023.

***Phlugiolopsis acuta* Zheng, Su & Shi, 2024**

Phlugiolopsis acuta Zheng, Su & Shi, 2024: 36. Type locality: Yingjiang, Yunnan.

Phlugiolopsis heterotrullis Pan, Ran & Bian, 2024: 243. **syn. nov.**

Material examined. Holotype: ♂, Tongbiguan, Yingjiang, Yunnan, 30 October, 2019, coll. Peng Cui. Paratypes: 1♂; Tongbiguan, Yingjiang, Yunnan, 28 October, 2019, coll. Peng Cui; 1♂; Tongbiguan, Yingjiang, Yunnan, 12 August, 2019, coll. Yanqing Li; 1♀; Yunnan, Yingjiang, Tongbiguan, 26 October, 2019, coll. Peng Cui; 1♀, Tongbiguan, Yingjiang, Yunnan, 16 August, 2019, coll. Yanqing Li. Other material: 2♂4♀, Tongbiguan, Yingjiang, Yunnan, 14 September, 2023, coll. Hao Xu and Yueting Duan; 1♂5♀, Tongbiguan, Yingjiang, Yunnan, 15 September, 2023, coll. Hao Xu and Yueting Duan; 1♂1♀, Tongbiguan, Yingjiang, Yunnan, 5 August, 2019, coll. Yanqing Li and Limin Lu; 5♀, Tongbiguan, Yingjiang, Yunnan, 28 October, 2019, coll. Peng Cui; 1♂, Tongbiguan, Yingjiang, Yunnan, 30 October, 2019, coll. Peng Cui; 1♀, Tongbiguan, Yingjiang, Yunnan, 26 October, 2019, coll. Yanqing Li; 1♀, Tongbiguan, Yingjiang, Yunnan, 10 August, 2018, coll. Peng Cui; 1♂, Xima, Yingjiang, Yunnan; 5 August, 2019, coll. Limin Lu.

Discussion. We examined the type specimens of *Phlugiolopsis acuta* Zheng, Su & Shi, 2024 and the topotypes. Based on these studies we propose *Phlugiolopsis heterotrullis* Pan, Ran & Bian, 2024 as a synonym of *Phlugiolopsis acuta* Zheng, Su & Shi, 2024.

***Phlugiolopsis furcicaudis* Zheng, Shi & Chang, 2023**

Phlugiolopsis furcicaudis Zheng, Shi & Chang, 2023: 68; Pan & Bian, 2024: 351. Type locality: Jingdong, Yunnan.

Phlugiolopsis cryphiconica Pan, Ran & Bian, 2024: 246. **syn. nov.**

Material examined. Holotype: ♂, Wuliangshan, Jingdong, Yunnan, 13 August, 2022, coll. Yanhao Duan. Paratypes: 1♂, Wuliangshan, Jingdong, Yunnan, 14 August, 2022, coll. Yanhao Duan; 1♂1♀, Wuliangshan, Jingdong, Yunnan, 15 August, 2022, coll. Yanhao Duan and Jie Su; 1♀, Wuliangshan, Jingdong, Yunnan, 22 August, 2022, coll. Jie Su. Other specimens: 1♂1♀, Wuliangshan, Jingdong, Yunnan, 9 August, 2022, coll. Yanhao Duan and Jie Su; 3♂1♀, Wuliangshan, Jingdong, Yunnan, 13 August, 2022, coll. Yanhao Duan and Jie Su; 1♂4♀, Wuliangshan, Jingdong, Yunnan, 14 August, 2022, coll. Yanhao Duan and Jie Su; 2♂9♀, Wuliangshan, Jingdong, Yunnan, 15 August, 2022, coll. Yanhao Duan and Jie Su; 1♂1♀, Pianma, Lushui, Yunnan, 16 September, 2020, coll. Qidi Zhu.

Discussion. After studying the type specimens of *Phlugiolopsis furcicaudis* Zheng, Shi & Chang, 2023 and topotypes, as well as the topotypes of *Phlugiolopsis cryphiconica* Pan, Ran & Bian, 2024. *Phlugiolopsis cryphiconica* Pan, Ran & Bian, 2024 is proposed as a synonym of *Phlugiolopsis furcicaudis* Zheng, Shi & Chang, 2023.

***Phlugiolopsis latusiprocera* Bian & Shi, 2018**

Phlugiolopsis (Uncinata) latusiprocera Bian & Shi, 2018: 352. Type locality: Baoshan, Yunnan.

Phlugiolopsis puerensis Pan, Ran & Bian, 2024: 250. **syn. nov.**

Material examined. Specimens collected from the type locality: 16♂28♀, Mangkuan, Baoshan, Yunnan, 22 August, 2023, coll. Yanhao Duan and Yonghui Li; 16♂25♀, Mangkuan, Baoshan, Yunnan, 23 August, 2023, coll. Yanhao Duan and Yonghui Li; 2♂7♀, Mangkuan, Baoshan, Yunnan, 24 August, 2023, coll. Yanhao Duan and Yonghui Li; 11♂17♀, Mangkuan, Baoshan, Yunnan, 25 August, 2023, coll. Yanhao Duan and Yonghui Li. Other specimens: 1♀, Baihualing, Baoshan, Yunnan, 20 August, 2018, coll. Peng Cui; 1♂2♀, Baihualing, Baoshan, Yunnan, 22 August, 2018, coll. Peng Cui; 1♂, Baihualing, Baoshan, Yunnan, 19 August, 2018, coll. Yuanhe Liu; 4♂1♀, Baihualing, Baoshan, Yunnan, 21 August,

2018, coll. Peng Cui; 1♂1♀, Lujiang, Longyang, Yunnan, 20 August, 2023, coll. Yanhao Duan; 1♂, Lujiang, Longyang, Yunnan, 21 August, 2023, coll. Yanhao Duan; 1♀, Lujiang, Longyang, Yunnan, 20 August, 2023, coll. Yonghui Li; 1♂2♀, Baihualing, Baoshan, Yunnan, 22 August, 2019, coll. Yanqing Li and Limin Lu; 1♂3♀, Baihualing, Baoshan, Yunnan, 14 September, 2019, coll. Peng Cui; 5♂8♀, Baihualing, Baoshan, Yunnan, 15 September, 2019, coll. Peng Cui; 3♂9♀, Baihualing, Baoshan, Yunnan, 16 September, 2019, coll. Peng Cui; 3♂2♀, Baihualing, Baoshan, Yunnan, 17 September, 2019, coll. Peng Cui; 1♀, Baihualing, Baoshan, Yunnan, 17 September, 2019, coll. Peng Cui; 6♂6♀, Baihualing, Baoshan, Yunnan, 20 September, 2019, coll. Peng Cui; 2♂2♀, Baihualing, Baoshan, Yunnan, 22 August, 2019, coll. Yanqing Li and Limin Lu; 2♂, Baihualing, Baoshan, Yunnan, 23 August, 2019, coll. Yanqing Li; 5♂8♀, Baihualing, Baoshan, Yunnan, 24 September, 2019, coll. Qidi Zhu; 1♂1♀, Liuku, Lushui, Yunnan, 19 September, 2020, coll. Qidi Zhu; 1♀, Luzhang, Lushui, Yunnan, 19 September, 2020, coll. Qidi Zhu.

Discussion. After examining the topotypes as well as those specimens collected from adjacent localities and the morphological images and original description of *Phlugiolopsis puerensis* Pan, Ran & Bian, 2024, we propose that *Phlugiolopsis puerensis* Pan, Ran & Bian, 2024 is a synonym of *Phlugiolopsis latusiprocera* Bian & Shi, 2018.

***Phlugiolopsis huangi* Bian, Shi & Chang, 2012**

Phlugiolopsis huangi Bian, Shi & Chang, 2012: 58; Pan, Ran & Bian, 2024: 253. Type locality: Jingxi, Guangxi.

Phlugiolopsis (Omkoiana) huangi: Gorochoy, 2020: 347, 350.

Phlugiolopsis platycercis Pan, Ran & Bian, 2024: 251. **syn. nov.**

Material examined. Holotype: ♂, Bangliang, Jingxi, Guangxi, 4 August, 2010, coll. Jianhua Huang. Paratypes: 1♀, Bangliang, Jingxi, Guangxi, 3 August, 2010, coll. Xun Bian; 2♂3♀, Diding, Guangxi, 8 August, 2010, coll. Xun Bian; 1♀, Bangliang, Jingxi, Guangxi, 4 August, 2010, coll. Jianhua Huang. Other material: 3♂3♀, Lizhou, Tianlin, Guangxi, 15 August, 2022, coll. Yunxiang Zhang; 2♂, Lizhou, Tianlin, Guangxi, 16 August, 2022, coll. Yunxiang Zhang.

Discussion. After checking the type specimens of *Phlugiolopsis huangi* Bian, Shi & Chang, 2012 and the male and female specimens collected from the area near the type locality, we find that the male of *Phlugiolopsis platycercis* Pan, Ran & Bian, 2024 can hardly be distinguished from *Phlugiolopsis huangi* Bian, Shi & Chang, 2012. *Phlugiolopsis platycercis* Pan, Ran & Bian, 2024 was reported only by a single female specimen, and it can hardly be distinguished from the female of *Phlugiolopsis breviproceris* Zheng, Shi & Chang, 2023.

Therefore, in consideration of sampling sites and morphology characteristics, *Phlugiolopsis platycercis* Pan, Ran & Bian, 2024 is proposed as a synonym of *Phlugiolopsis huangi* Bian, Shi & Chang, 2012.

Acknowledgement

This project is supported by the National Natural Science Foundation of China (No. 31372232, 32270488) and the Postgraduate's Innovation Fund Project of Hebei University (HBU2024SS038). The authors are thankful to the graduates for collecting many specimens.

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