

Two new species in the genus *Furusawaia* Chûjô (Coleoptera: Chrysomelidae) from China

Changping DING, Jian SHEN, Meixia YANG^①

Shaanxi Institute of Zoology, Xi'an, Shaanxi 710032, China

Abstract: *Furusawaia* Chûjô, 1962 is a genus endemic to China with seven known species distributed only in Yunnan, Sichuan and Taiwan. In this study, two new species from Yunnan: *F. yangi* sp. nov. and *F. gaoligongensis* sp. nov., are described. A key and a checklist to the *Furusawaia* are given.

Keywords: Galerucinae; taxonomy; key

古萤叶甲属 *Furusawaia* 二新种记述 (鞘翅目: 叶甲科)

丁昌萍, 申健, 杨美霞^①

陕西省动物研究所, 陕西 西安 710032

摘要: *Furusawaia* Chûjô 属全世界已知 7 种, 仅分布于中国云南、四川、台湾, 是中国特有属。本文描述采自云南的古萤叶甲属 2 新种: *F. yangi* sp. nov. 和 *F. gaoligongensis* sp. nov., 文中还提供了该属的名录, 编制了该属的分种检索表。

关键词: 萤叶甲亚科; 分类; 检索表

Introduction

Genus *Furusawaia* Chûjô belongs to Galerucinae (Coleoptera: Chrysomelidae) and was established by Chûjô (1962) with *F. yosonis* from Taiwan, China as the type species. *Furusawaia* was initially placed in the section Hylaspites within the tribe Sermylini by Wilcox (1971), and then was transferred to section Capulites by Seenô & Wilcox (1982). Lopatin (2008) identified the second *Furusawaia* species, *F. continentalis*, from Yunnan and Sichuan, China. Lee & Bezděk (2021) identified four new species of *Furusawaia*, which were all distributed in Taiwan, China. Based on the convexity of the pronotum of different species, *Yunnaniata* Lopatin was regarded as a synonym of *Furusawaia* Chûjô. *Yunnaniata konstantinovi* Lopatin was transferred to the genus *Furusawaia* Chûjô. Up to now, seven species of this genus are known in the world, and they occur in China with two species distributed in Yunnan and Sichuan and the other five species in Taiwan.

Material and methods

We placed the specimen under a Nikon SMZ745 stereomicroscope with the ventral side

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①Corresponding author, E-mail: ymeixia2013@163.com

facing up. We then inserted the tip of a needle into the thoracoabdominal joint, gently prying to remove the entire abdomen. The whole abdomen was boiled in 10% NaOH solution for about 3–5 minutes (the specific time depending on the degree of ossification of the specimen) and then taken it out when the muscle had dissolved completely. We rinsed the treated abdomen in distilled water and placed it in a clean petri dish with ventral side facing up. The external genitalia were removed with tweezers. The abdomen and external genitalia were stored together in a micro-centrifuge tube with glycerin, and the centrifuge tube was stored with the needle specimen on the same needle.

Habitus and genital photographs were taken with Leica DFC450 micro digital imaging system (CCD), attached to a Leica M205C microscope. All photos were edited using Adobe Photoshop CS6.

The material in this study is deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZAS).

Taxonomy

Furusawaia Chûjô, 1962

Furusawaia Chûjô, 1962: 107. Type species: *Furusawaia yosonis* Chûjô, 1962.

Yunnaniata Lopatin in Lopatin & Konstantinov, 2009: 8. Type species: *Yunnaniata konstantinovi* Lopatin, 2009. Synonymized by Lee & Bezděk, 2021: 119.

Genus characteristics. Head narrower than pronotum, compound eyes developed. Antennae filiform, antennomere I longest, antennomeres II–III shortest, the other antennomeres shorter than antennomere IV. Pronotum 1.7–1.8× wider than long; lateral border margined and rounded, widest at apical 1/3, basal margins and apical margin straight, anterior angle developed, protruding forward, posterior angle nearly rectangular; disc strongly convex, with distinct lateral foveae, and with less obvious punctures. Elytra 1.2–1.3× longer than wide; lateral margin rounded, broadens behind disc, smooth and convex, with sparse, coarse punctures; epipleuron narrow, extends to apex; procoxal cavities closed, midcoxae widely separated, the distance between them as wide as half of transverse diameter of procoxal cavity; spacing between metacoxae equal the diameter of metacoxal cavity; legs developed, tibia apex of hind leg with a spine, tarsal segment I shorter than remaining combined length, tarsal claws appendiculate. Last sternite of male with trilobite concavities, last sternite of female complete.

Distribution. China (Taiwan, Sichuan, Yunnan).

Checklist of *Furusawaia* Chûjô, 1962

1. *F. continentalis* Lopatin, 2008 — China (Sichuan, Yunnan).
2. *F. gaoligongensis* **sp. nov.** — China (Yunnan).
3. *F. jungchani* Lee & Bezděk, 2021 — China (Taiwan).
4. *F. konstantinovi* (Lopatin, 2009) — China (Yunnan).
5. *F. lui* Lee & Bezděk, 2021 — China (Taiwan).
6. *F. tahsiangi* Lee & Bezděk, 2021 — China (Taiwan).
7. *F. tsoui* Lee & Bezděk, 2021 — China (Taiwan).
8. *F. yangi* **sp. nov.** — China (Yunnan).

9. *F. yosonis* Chûjô, 1962 — China (Taiwan).

Key to the species of genus *Furusawaia* Chûjô

1. Each elytron with four black spots or bands 2
- Each elytron with five black spots or bands 7
2. Each elytron with four black transverse bands 3
- Each elytron with band and spot 4
3. Humeral calli of elytron and scutellum black, second transverse band of elytron widest *F. yosonis* Chûjô
- Humeral calli of elytron yellowish brown, scutellum brown, width of transverse bands 1–3 subequal
..... *F. tahsiangi* Lee & Bezděk
4. Elytra reddish brown, surrounding margin black, basal three transverse bands black, apical with black spots
..... *F. konstantinovi* (Lopatin)
- Middle disc of elytron with two black transverse bands, basal and apical of elytron with black spots 5
5. Black spot on humeral calli of elytron does not connect with second band at mesal suture · *F. yangi* **sp. nov.**
- Black spot on humeral calli of elytron connects with second band at mesal suture 6
6. Width of second black strip of elytron equal to the width of third black band *F. continentalis* Lopatin
- Width of second black strip of elytron wider than the width of third black band ··· *F. gaoligongensis* **sp. nov.**
7. Spots on elytron 1:1:2:1 from base to apex *F. jungchani* Lee & Bezděk
- Spots on elytron 1:2:1:1 from base to apex 8
8. Lateral margin of pronotum developed with protruding anterior angel *F. lui* Lee & Bezděk
- Lateral margin of pronotum not developed, anterior angel obtuse *F. tsoui* Lee & Bezděk

1. *Furusawaia yangi* **sp. nov.** (Fig. 1)

Description. Length 7.50 mm, width 4.50 mm. Body color black, antennae black, antennomeres IV–VI covered with fine brown hairs. Elytra reddish brown with a large black spot protruding toward humeral calli on basal area, middle area of elytra with a black transverse band extending anteriorly and connecting with basal black spot at lateral margin and mesal suture.

Antennae filiform, not longer than the middle of elytron, antennomere I longest, antennomere II shortest, antennomere III 1.6× longer than antennomere II, antennomere IV longer than antennomere III, antennomere IV and antennomere V subequal, antennomeres VI–XI shorter than antennomere IV, antennomeres VI & VII subequal, and VIII–XI subequal. Pronotum 1.7× wider than long, anterior angle obtuse, posterior angle almost rectangular, lateral margin wide; disc relatively flat, with sparse fine punctures, lateral fovea extending to basal margin. Scutellum obtuse triangular. Base of elytra slightly wider than pronotum, elytra 1.3× longer than wide, disc convex with coarse punctures, middle to basal area near the mesal suture with dense punctures, diameter of punctures longer than spacing between punctures. Tarsal segments I–IV covered with brown hairs, tarsal segment I of hind leg relatively wide, length equal to the sum of tarsal segments II–III, subequal to the length of last tarsal segment (Figs 1A–C).

Aedeagus strongly sclerotized, 6.6× longer than wide in dorsal review, parallel-sided, middle to apical area broadens, apex obtuse with a small protuberance; slightly curved in lateral review, narrowed near apex, curvature increases (Figs 1D–F). Middle to apex of gonocoxae sclerotized, slender, apex broadened, narrowly rounded and covered with setae (Fig. 1H). Female sternite VIII weakly sclerotized, apex fan-shaped, spiculum slender and

extremely long (Fig. 1G). Spermathecal duct elongate and straight, spermathecal receptaculum strongly sclerotized and swollen with epidermis threaded, pump narrow and strongly curved, apex narrowly rounded (Fig. 1I).

Holotype. ♂, **China**, Yunnan Province, Lushui, FengshuiYakou roadside, 3088 m, 25°58'41.3"N, 98°40'30.2"E, 19-V-2005, leg. Hongbin LIANG. **Paratypes.** 1♂2♀, **China**, Yunnan Province, Lushui, FengshuiYakou roadside, 3088m, 25°58'41.3"N, 98°40'30.2"E, 19-V-2005, leg. Hongbin LIANG; 1♂1♀, **China**, Yunnan Province, Lushui, FengshuiYakou roadside, 3120 m, 25°58'24.9"N, 98°41'20.6"E, 17-V-2005, leg. Hongbin LIANG.

Etymology. This new species is named after entomologist Xingke YANG, in honor of his outstanding contributions to the study of Chinese leaf beetle classification.

Remarks. *F. yangi* **sp. nov.** closely resembles *F. continentalis* Lopatin, 2008. The main difference lies in the width of bands on basal 1/2 and apical 1/4 of elytron. In *F. yangi*, the basal 1/2 band is greatly wider than the apical 1/4 band; in *F. continentalis*, the basal 1/2 band is narrow and the apical 1/4 band is wide. Compared with *F. yangi* **sp. nov.**, aedeagus of *F. continentalis* is straighter and the apex is more acute in lateral review.

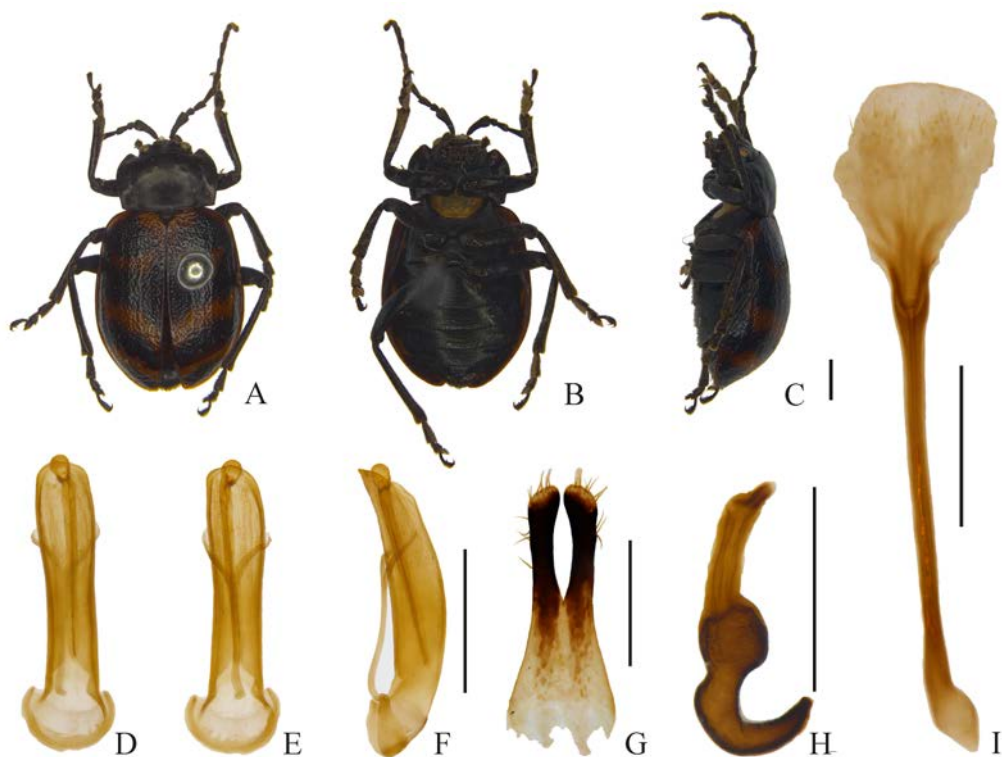


Figure 1. *Furusawaia yangi* **sp. nov.** A–C. Habitus; D–F. Aedeagus; G. Female sternite VIII; H. Gonocoxae; I. Spermatheca. A, D. Dorsal views; B, E. Ventral views; C, F. Lateral views. Scale bars = 1 mm (A–F); 0.5 mm (G–I).

2. *Furusawaia gaoligongensis* **sp. nov.** (Fig. 2)

Description. Length 7.30 mm, width 4.00 mm. Body color black; antennae black, antennomeres IV–VI covered with fine brown hairs. Elytra yellowish brown with a large black spot protruding toward humeral calli on basal area, middle area of elytron with a black

transverse band widened near lateral margin and mesal suture but not connected with basal black spot, apical 1/4 of elytron with a black transverse band widened along lateral margin, apex with a long elliptical oblique black spot.

Antennae filiform, not longer than the middle of elytron, antennomere II shortest, antennomere III 1.5× longer than antennomere II, antennomere IV longer than antennomere III, antennomeres IV–VIII subequal, IX–XI subequal. Pronotum 1.9× wider than long, anterior angle obtuse, posterior angle almost rectangular, lateral margin wide; disc relatively flat, covered with sparse fine punctures, lateral fovea extend to basal margin. Scutellum triangular. Base of elytra slightly wider than pronotum, elytra 1.2× longer than wide, disc convex with sparse fine punctures, diameter of punctures shorter than spacing between punctures. Tarsal segments I–IV covered with brown hairs, tarsal segment I of hind leg relatively wide, length equal to the sum of segments II–III, slightly shorter than the length of last tarsal segment (Figs 2A–C).

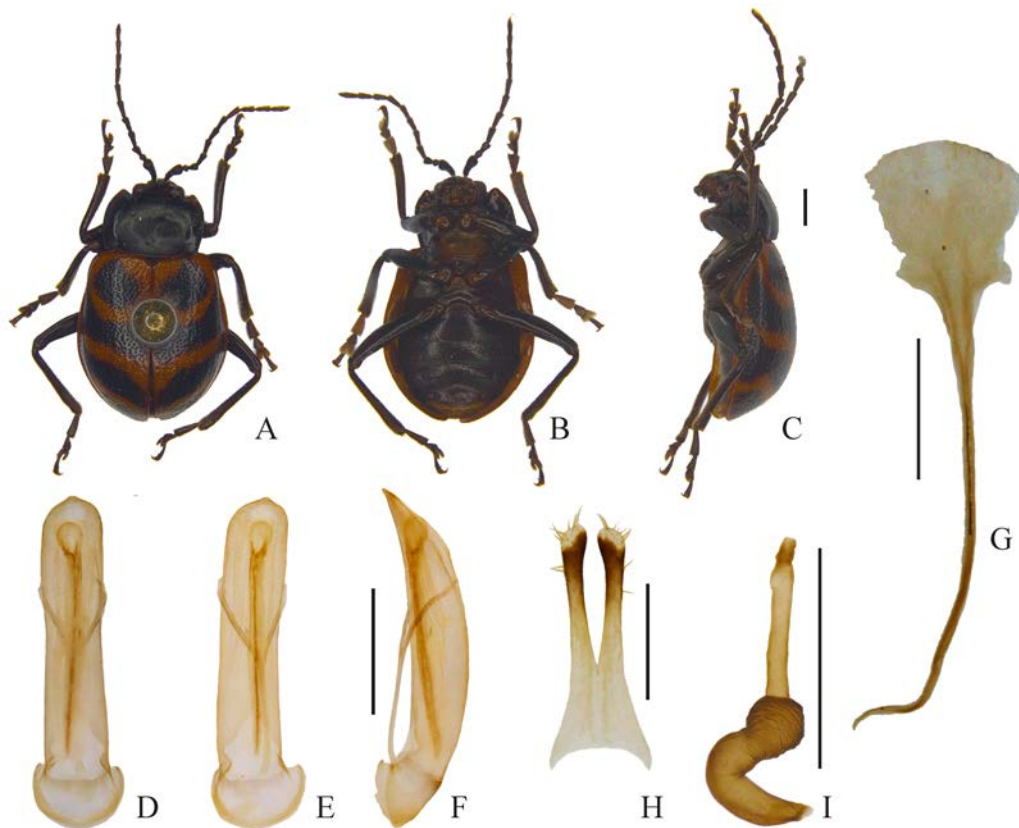


Figure 2. *Furusawaia gaoligongensis* sp. nov. A–C. Habitus; D–F. Aedeagus; G. Female sternite VIII; H. Gonocoxae; I. Spermatheca. A, D. Dorsal views; B, E. Ventral views; C, F. Lateral views. Scale bars = 1 mm (A–F); 0.5 mm (G–I).

Aedeagus weakly sclerotized, 6.1× longer than wide in dorsal review, parallel-sided, apical area narrowed, apex obtuse with a subacute protuberance; slightly curved in lateral view, apical area narrows rapidly, apex acute (Figs 2D–F). Only apices of gonocoxae

sclerotized, thick and short, apex slightly swollen and covered with setae (Fig. 2H). Female sternite VIII weakly sclerotized, apex fan-shaped, spiculum slender and extremely long (Fig. 2G). Spermathecal duct short and straight, spermathecal receptaculum with fine thread, strongly sclerotized, moderately swollen, pump narrow and strongly curved, apex narrowly rounded (Fig. 2I).

Holotype. ♂, **China**, Yunnan Province, Gaoligong Mountain, Nujiang Prefecture, PianmaYakou, 3200 m, 25°54'24.0"N, 98°41.0'E, 11-X-1998, leg. D.H. Kavanaugh, C.E. Griswold, C. Ferraris & C.L. Long. **Paratype.** 1♀, **China**, Yunnan Province, Lushui, FengshuiYakou, roadside, 3130m, 25°58'41"N, 98°40'37"E, 15-X-2002, leg. Hongbin LIANG, Sino-American Exped. Institute Zoology, CAS.

Etymology. The specific epithet is derived from Gaoligong Mountain in Yunnan Province, where the type specimen was collected.

Remarks. *F. gaoligongensis* **sp. nov.** closely resembles *F. continentalis* Lopatin, 2008. The main difference is that in *F. gaoligongensis*, the bands on basal 1/2 of elytron is not connected with the basal black spot under humeral calli at mesal suture, bands on basal 1/2 and apical 1/4 of elytron are subequal, the aedeagus is parallel-sided in dorsal view.

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References

- Chûjô M. 1962. A taxonomic study on the Chrysomelidae (Insecta: Coleoptera) from Formosa. Part XI. Subfamily Galerucinae. *The Philippine Journal of Science*, 91: 1–239.
- Lee CF & Bezděk J. 2021. Revision of the genus *Furusawaia* Chûjô, 1962 (Coleoptera, Chrysomelidae, Galerucinae). *ZooKeys*, 1057: 117–148.
- Lopatin IK. 2008. New leaf-beetle species (Coleoptera, Chrysomelidae) from China: IX. *Entomological Review*, 88: 918–927.
- Lopatin IK & Konstantinov AS. 2009. New genera and species of leaf beetles (Coleoptera: Chrysomelidae) from China and South Korea. *Zootaxa*, 2083: 1–18.
- Seeno TN & Wilcox JA. 1982. Leaf beetle genera (Coleoptera: Chrysomelidae). *Entomography*, 1: 1–221.
- Wilcox JA. 1971. Chrysomelidae: Galerucinae (Oidini, Galerucini, Metacyclini, Semylini). In: Wilcox JA (Ed.), *Coleopterorum Catalogus Supplementa*. Pars 78(1), 2nd edn. W. Juunk, 's-Gravenhage, pp. 1–220.