



Revision of *Euliroetis* Ogloblin, 1936 (Coleoptera: Chrysomelidae: Galerucinae) from China, with descriptions of two new species

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Abstract

In this study, based on the examination of type specimens, the morphology of male and female genitalia and additional body characters, the leaf-beetle genus *Euliroetis* is taxonomically revised. Five Chinese species of *Euliroetis* are redescribed, a new synonymy is proposed: *E. nigrinota* Gressitt et Kimoto, 1963 = *E. simulonigrinota* Yang, 1992, **syn. nov.**, and two new species are described: *E. testacea* Feng et Yang, **sp. nov.** and *E. tenuis* Feng et Yang, **sp. nov.** Additionally, photographs of all male adults and genitalia, female genitalia, line drawings of all males' abdomens, and a key to species of *Euliroetis* is provided.

Key words: Leaf beetles, Mt. Nanling, new synonymy, taxonomy

Introduction

In China, the research on Galerucinae was first carried out by Prof. S.-H. Chen. He revised numerous genera and described many new genera and species, and his research laid a solid foundation for the study of leaf beetles in China (Yang *et al.* 2015). At the same time, his research has also attracted many foreign scholars to study Chinese leaf beetles, which resulted in excellent publications, such as Chûjô (1962), Gressitt & Kimoto (1963), etc. As one of the largest subfamilies of Chrysomelidae, there are now 124 genera and 1054 species in Galerucinae from China (Yang *et al.* 2015).

The genus *Euliroetis* was established by Ogloblin (1936) for *Aenidea ornata* Baly, 1874 from China, Russia, Korea, and Japan. There are five species, *E. abdominalis* (Baly, 1874), *E. lameyi* (Laboissière, 1929), *E. nigripes* (Baly, 1874), *E. ornata* (Baly, 1874), and *E. suturalis* (Laboissière, 1929), originally described or classified in *Aenidea* Baly, 1874, *Liroetis* Weise, 1887, and *Phyllobrotica* Chevrolat, 1836, were transferred to *Euliroetis* (Ogloblin 1936). In the subsequent study, Gressitt & Kimoto (1963) described a new species *Euliroetis nigrinotum* from China, transferred *Liroetis melanocephala* (Bowditch, 1925) to *Euliroetis*, and proposed a new synonym: *Euliroetis ornata* (Baly, 1874) = *Phyllobrotica ornata* Jacoby, 1888. Yang (1992) described a new species *Euliroetis simulonigrinota* from China. Before this study, eight species of *Euliroetis* were known, all of which were found in the Oriental and Palearctic Regions, with six species in China (Beenen 2024).

Recently, insect biodiversity research in the Nanling Mountains has attracted a lot of attention. The Nanling Mountains (ca. 23.63°–27.23°N and 109.72°–116.68°E), are an important mountain range and watershed in southern China, located at the border of Hunan, Jiangxi, Guangdong Provinces, and the Guangxi Zhuang Autonomous Region. The mountain range extends approximately 600 km from east to west and approximately 200 km from

north to south. It includes the administrative divisions of 4 provinces (regions), 16 cities, and 73 counties (Wang *et al.* 2024; Zhuang *et al.* 2021).

When we studied the leaf beetles from the Nanling Mountains, two species in the genus *Euliroetis* were identified: *Euliroetis ornata* (Baly, 1874) and a new species: *Euliroetis tenuis* **sp. nov.** While revising all Chinese species of *Euliroetis*, we discovered another new species *Euliroetis testacea* **sp. nov.** and proposed a new synonymy: *Euliroetis nigrinota* Gressitt *et* Kimoto, 1963 = *Euliroetis simulonigrinota* Yang, 1992, **syn. nov.**

Material and methods

The specimens of new species were collected by net sweeping and preserved in 100% ethanol. The morphological characters were examined with an Olympus SZ61 microscope. The genitalia of males from each species were dissected using the following procedure: for dried or ethanol preserved specimens, the abdomen was removed from each specimen, bathed in boiling water for 5–10 min, then transferred to a vial containing 10% KOH solution and bathed for 3–5 min. The abdomen with the aedeagus was washed in distilled water 3 or 4 times, transferred onto a cavity slide using fine forceps and the aedeagus was separated from the abdomen using a hooked, fine dissecting needle.

Habitus images were taken using a Canon 5DSR digital camera. Aedeagus images were taken using a Nikon D610 digital camera, attached to a Zeiss V/A1 microscope (with 5× objective lens). A cable shutter release was used to prevent the camera from shaking. To obtain the full depth of focus, all images were stacked using Helicon Focus 7.7.4 and the resulting output was edited with Adobe Photoshop CC 2018.

Abbreviation used in the paper

TL: type locality.

TD: type deposition.

The material in this study is deposited in the following institutions:

BMNH Natural History Museum, London, UK

BSBM Bishop Museum Honolulu, Hawaii, USA

CAS California Academy of Sciences, San Francisco, California, USA

IZCAS Institute of Zoology, Chinese Academy of Sciences, Beijing, CHINA

IZGAS Institute of Zoology, Guangdong Academy of Sciences, Guangzhou, CHINA

MCZ Museum of Comparative Zoology, Harvard University, Massachusetts, Cambridge, USA

MNHN Muséum National d'Histoire Naturelle, Paris, FRANCE

ZMH Zoological Museum Hamburg, Hamburg, GERMANY

Taxonomy

Genus *Euliroetis* Ogloblin, 1936

Euliroetis Ogloblin 1936: 197. **Type species:** *Aenidea ornata* Baly, 1874, by original designation.

Diagnosis. Body elongate, medium-sized (length 3.9–7.0 mm); pronotum wider than head, 1.2–1.5× as wide as long, apical and basal margins not bordered, lateral margins bordered, straight and parallel; disc of pronotum with a transverse furrow in middle or with a slight depression at each side behind middle; posterior angle of pronotum with rectangular incision; procoxal cavity open; base of elytra wider than pronotum, humeri slightly convex; surface of elytra without ridges; epipleuron narrowed; in male a deep medial concavity on ventral surface of abdomen; claw appendiculate.

This genus is similar to *Japonitata* Strand, 1935. Specifically, *Euliroetis* with a deep medial concavity on ventral surface of abdomen in male, have no ridges on elytra (*Japonitata* with distinct ridges on elytra). *Phyllobrotica* Chevrolat, 1836 also shares some similar characters with *Euliroetis*, including modified abdomen and posterolateral rectangular incision of pronotum, but differs in *Phyllobrotica* by the absence of an epipleuron (*Euliroetis* with epipleuron).

Distribution. Oriental and Palaearctic Regions.

Euliroetis lameyi (Laboissière, 1929)

(Figs 2A, 3B, 4A, 5A, 6A, 7A, 7G)

Liroetis lameyi Laboissière 1929: 278. TL Vietnam. TD MNHN, ZMH.

Euliroetis lameyi: Ogloblin 1936: 199; Gressitt & Kimoto 1963: 503 (noted); Yang 1992: 563 (noted); Wang & Yang 1998: 81 (new distribution); Beenen 2010: 474 (catalog); Yang 2015: 225 (catalog); Beenen 2024: 432 (catalog).

Euliroetis lameyi var. *obscuripes* Ogloblin 1936: 200 (unavailable infrasubspecific taxon, see Beenen 2024).

Type specimens examined. 1♂, SYNTYPE. Haut Tonkin Lamey. *Liroetis lameyi* Laboissière Det. 1929. Le Moul't vend via Reinlek Fing. Nr. 1, 1957. ZMH844068; ZMH. **Other specimens examined.** 1♂1♀, CHINA, Zhejiang Province, Tianmushan; 1 Jun. 1981; IZCAS. 6♂♂2♀♀, idem.; 2 May 1980; Pei-Yu Yu leg.; IZCAS. 1♀, CHINA, Zhejiang Province, Tianmushan; 21 Jun. 1936; IZCAS. 1♂, CHINA, Fujian Province, Jianyang, Huangkeng; 300 m a. s. l.; 12 Apr. 1960; Fu-Ji Pu leg.; IZCAS. 1♀, CHINA, Guangxi Province, Guilin, Liangfeng; 1 May 1958; IZCAS. 1♀, CHINA, Sichuan Province, Mount Emei; 550 m a. s. l.; 7 May 1957; Ke-Ren Huang leg.; IZCAS.

Redescription. Male (Fig. 2A). Length 4.0–6.6 mm, width 2.0–3.4 mm. Antennae brown with antennomeres 1–5 reddish brown. Head, pronotum, scutellum, and abdomen reddish brown, elytra yellow with apex black, and all margins black, each elytron with one longitudinal black stripe in suture. Femur and tibia outside brown, inside yellow. Tarsus and claw brown. Head smooth, impunctate. Antennae slender, 0.85× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.6× as long as antennomere 2, antennomere 4 slightly longer than antennomere 3, antennomere 3 and antennomeres 5–11 equal in length. Pronotum 1.3× as wide as long, disc smooth, impunctate, with a pair of shallow impressions at center. Scutellum triangular, smooth, and impunctate. Elytra wider than pronotum, 0.7× as long as body, 2.1× as long as wide, dorsal surface covered with small punctures, interstices of punctures equal to diameter of individual punctures. Abdominal ventrites 1–4 gradually widened, ventrite 5 longest, three lobed, with a deep medial concavity (Figs 4A, 5A). Aedeagus widest in middle, narrowed towards apex and base; distinctly bifurcated from middle to apex, and distinctly bent at apex; in lateral view also distinctly bent (Fig. 6A).

Female. Length 4.2–6.2 mm, width 2.2–3.2 mm. Ventrites 1–5 without incisions, ventrite 5 without concavity. Spermatheca with slightly narrowed nodulus, middle part widened, cornu curved in middle and rounded at apex, spermathecal duct slender and strongly curved at base (Fig. 7A). Vaginal palps with wide base, anteriorly with subtriangular tip, each palp slightly narrowing posteriorly, with pointed apex, 5 setae placed at apex, and additional 2 setae placed subapically (Fig. 7G).

Distribution (Fig. 1). China: Zhejiang, Fujian, Guangxi, Sichuan (this paper), Hunan; Russia, Vietnam (Yang *et al.* 2015).

Euliroetis melanocephala (Bowditch, 1925)

(Figs 2B, 3C, 4B, 5B, 6B, 7B, 7H)

Hoplosoma melanocephala Bowditch 1925: 246. TL China: Fujian. TD MCZ.

Liroetis melanocephala: Laboissière 1929: 277.

Euliroetis ornata ab. *melanocephala*: Ogloblin 1936: 201.

Euliroetis melanocephala: Gressitt & Kimoto 1963: 503; Yang 1992: 563 (noted); Wang & Yang 1998: 81 (new distribution); Beenen 2010: 474 (catalog); Yang 2015: 225 (catalog); Beenen 2024: 432 (catalog).

Type specimens examined. ♂, HOLOTYPE. FOKIEN. 323 *Hoplosoma melanocephala* Bow Type17592; MCZ.

Other specimens examined. 1♂, CHINA, Anhui Province, Chizhou. 4♀♀, CHINA, Fujian Province, Jianyang, Huangkeng; 350 m a. s. l.; 23 Apr. 1960; Yi-Ran Zhang leg.; IZCAS. 2♂♂, idem.; Cheng-Lin Ma leg.; IZCAS. 3♂♂8♀♀, idem.; Fu-Ji Pu leg.; IZCAS. 8♂♂16♀♀, idem.; 26 Apr. 1960; Sheng-Qiao Jiang leg.; IZCAS. 6♂♂10♀♀, idem.; Dazhulan; 15 Apr. 1948; IZCAS. 5♂♂8♀♀, idem.; 5 Jun. 1948; IZCAS.

Redescription. Male (Fig. 2B). Length 4.2–6.5 mm, width 2.2–3.4 mm. Antennae yellow brown. Head reddish brown or black. Pronotum, scutellum, elytra, ventral surface of thorax, and abdomen yellow or yellow brown. Femur and tibia externally black, internally yellow or yellow brown, tarsus and claw brown. Head smooth, and impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.6× as long as antennomere 2, antennomere 4 slightly longer than antennomere 3, antennomere 3 and antennomeres 5–11 equal

in length. Pronotum 1.2× as wide as long, covered with small punctures at base, with a pair of shallow impressions in middle. Scutellum semicircular, smooth, impunctate. Abdominal ventrites 1 and 2 with pair of sub-triangular protrusions at center, extending to posterior; protrusions on ventrite 2 long, covering ventrite 3; ventrites 3–5 with a deep medial concavity, lateral portions strongly curved to center; pygidium deflexed posteriorly (Figs 4B, 5B). Aedeagus widest in middle, narrowed towards base; bifurcated from middle to apex; in lateral view strongly bent (Fig. 6B).

Female. Length 4.0–6.2 mm, width 2.0–2.9 mm. Ventrites 1–2 without sub-triangular protrusions, ventrites 3–5 without incisions. Spermatheca with obviously narrowed nodulus, middle part widened and curved, cornu slightly curved and pointed at apex, spermathecal duct slender and strongly curved at base (Fig. 7B). Vaginal palps with wide base, anteriorly with subtriangular tip, each palp with pointed apex, 5 setae placed at apex, additional 2 setae subapically (Fig. 7H).

Distribution (Fig. 1). China: Anhui, Fujian (this paper), Zhejiang, Jiangxi, Hunan, Guangdong (Yang *et al.* 2015).

Euliroetis nigrinota Gressitt *et* Kimoto, 1963

(Figs 2C–D, 3D–E, 4C–D, 5C–D, 6C–D, 7C, 7I)

Euliroetis nigrinotum Gressitt *et* Kimoto 1963: 503; Wang & Yang 1998: 81 (new distribution); Beenen 2010: 474 (catalog); Yang 2015: 225 (catalog); Beenen 2024: 432 (catalog). **TL** China: Fujian. **TD** BSBM, CAS.

Euliroetis simulonigrinotum Yang 1992: 563. **syn. nov.**

Type specimens examined. 1♀, PARATYPE. Hangchow China 19 May 1923. Van Dyke Collection. *Euliroetis nigrinotum* Gressitt & Kimoto; CAS. Holotype of *Euliroetis simulonigrinotum*; ♂, CHINA, Hunan Province, Hengyang; 18 May 1981; Bai-Cheng Liu leg.; Holotype; *Euliroetis simulonigrinotum* sp. nov. Yang; IZCAS.

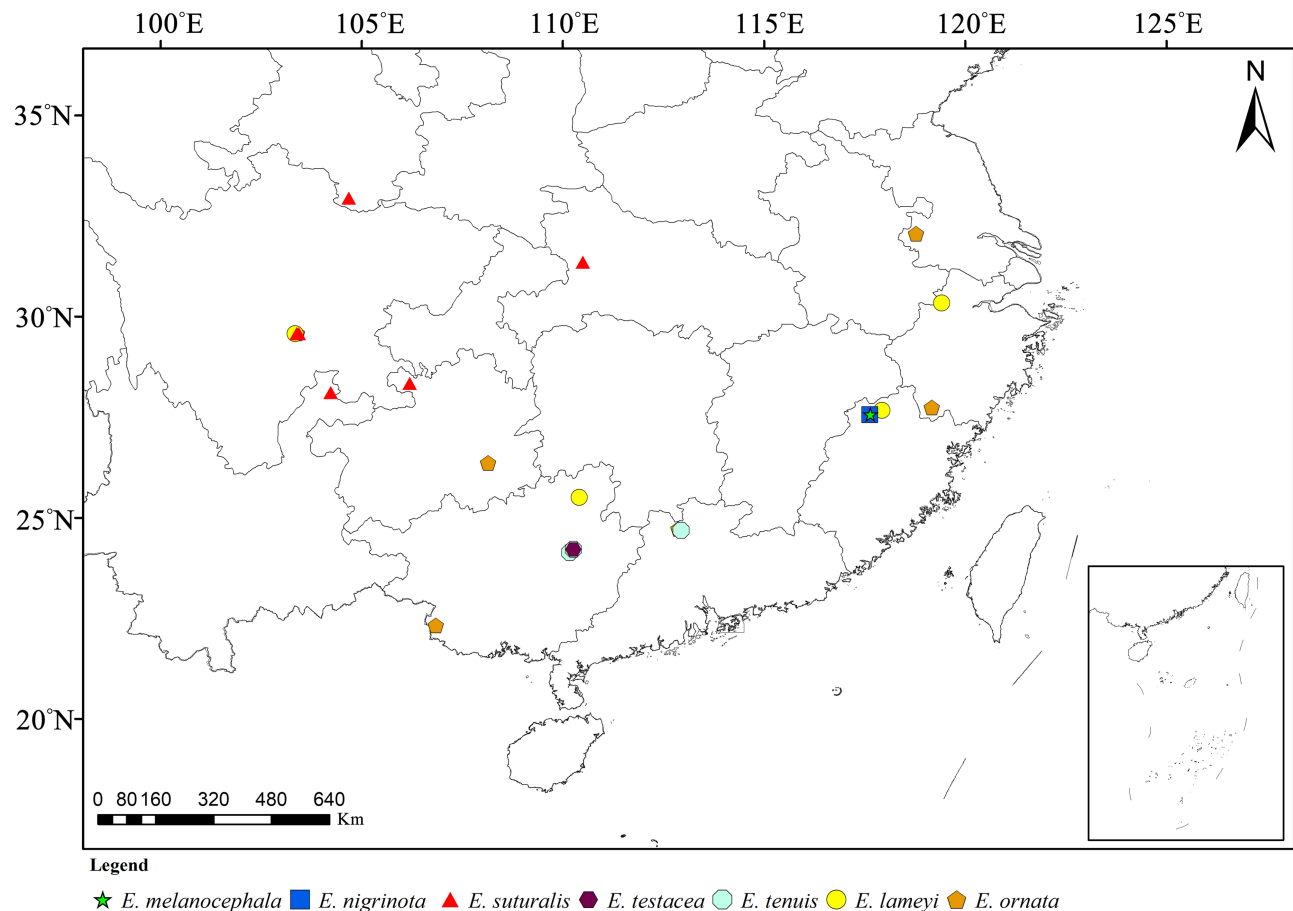


FIGURE 1. Distribution map of Chinese *Euliroetis*.

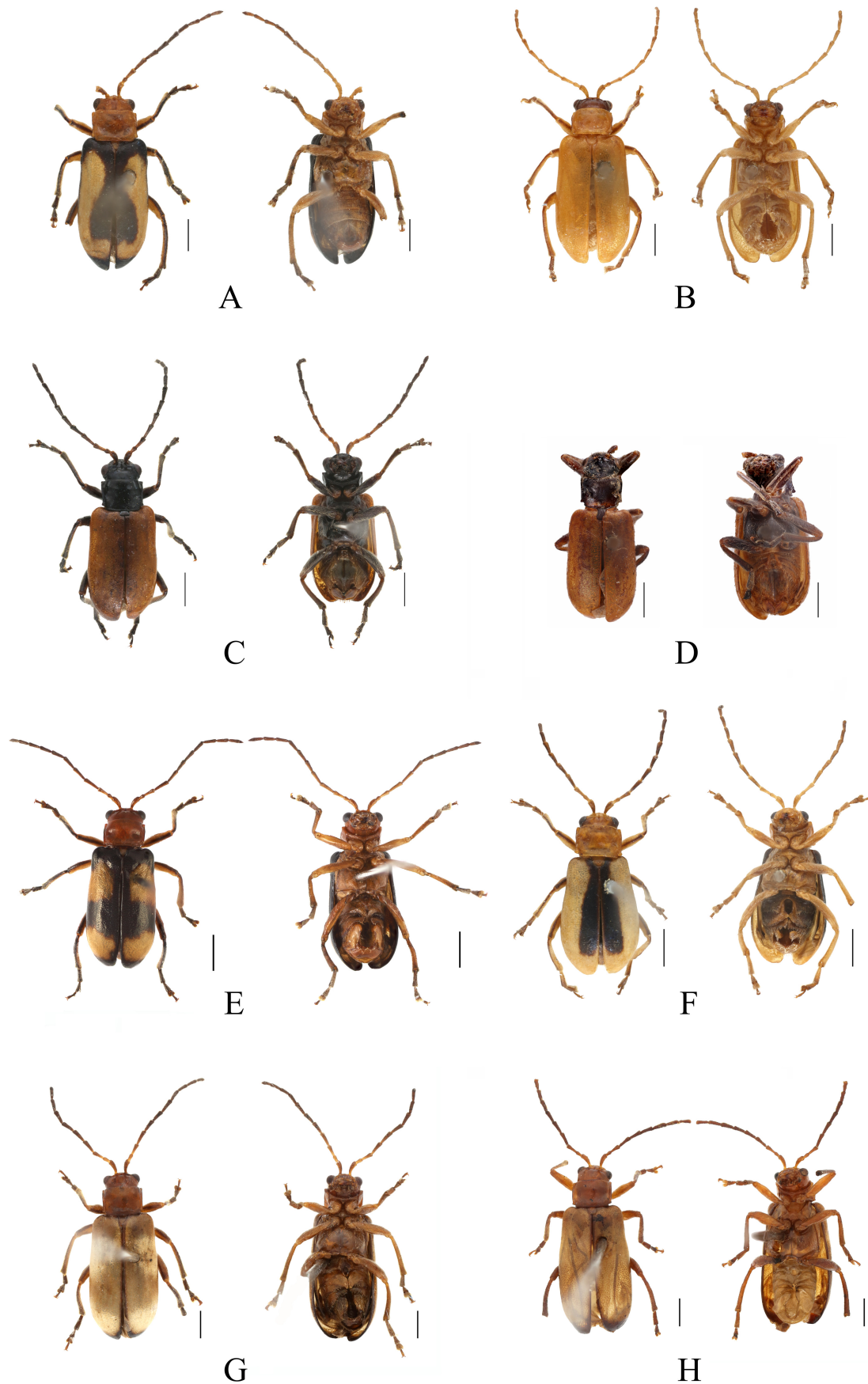


FIGURE 2. Habitus of *Euliroetis*. **A.** *Euliroetis lameyi*. **B.** *Euliroetis melanocephala*. **C.** *Euliroetis nigrinota*. **D.** *Euliroetis nigrinota* (HOLOTYPE of *Euliroetis simulonigrinota*). **E.** *Euliroetis ornata*. **F.** *Euliroetis suturalis*. **G.** *Euliroetis tenuis* **sp. nov.** **H.** *Euliroetis testacea* **sp. nov.** Scale bars: 1 mm.

Other specimens examined. 8♂♂8♀♀, CHINA, Fujian Province, Jianyang, Huangkeng; 800 m a. s. l.; 23 Apr. 1960; Fu-Ji Pu leg.; IZCAS. 4♂♂2♀♀, idem.; Sheng-Qiao Jiang leg.; IZCAS. 3♂♂2♀♀, idem.; 26 Apr. 1960; Fu-Ji Pu leg.; IZCAS. 3♂♂6♀♀, idem.; Cheng-Lin Ma leg.; IZCAS. 5♂♂12♀♀, idem.; Mount Wuyi; 26 Apr. 1997; Yan-Yu Wu leg.; IZCAS. 4♂♂11♀♀, idem.; 28 Apr. 1997; Yan-Yu Wu leg.; IZCAS.

Redescription. Male (Fig. 2C). Length 4.4–6.4 mm, width 2.2–3.2 mm. Antennae black brown with antennomeres 1–4 brown. Head and pronotum black, elytra reddish brown. Scutellum, ventral surface of thorax, abdomen, and leg black brown. Head smooth, and impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.5× as long as antennomeres 2, antennomere 4 slightly longer than antennomere 3, antennomere 3 and antennomeres 5–11 equal in length. Pronotum 1.2× as wide as long, dorsal surface irregularly covered with small punctures, with a pair of shallow impressions in middle. Scutellum rectangular, smooth, impunctate. Elytra wider than pronotum, 0.75× as long as body, and 2× as long as wide, dorsal surface covered with small punctures, interstices of punctures narrower than diameter of punctures. Abdominal ventrite 1 with 2 small pointed protrusions, ventrite 2 and ventrite 3 with pair of clavate protrusions, ventrites 1–4 gradually widened, ventrite 5 longest, with a deep medial concavity (Figs 4C, 5C). Aedeagus widest in middle, narrowed towards apex and base; base with a shallow notch, slightly bifurcated from middle to apex; in lateral view strongly bent (Fig. 6C).

Female. Length 4.0–6.3 mm, width 2.2–3.3 mm. Ventrites 2–3 without protrusions, ventrite 5 without concavity. Spermatheca with slightly narrowed nodulus, middle part slightly widened and straightened, cornu curved in middle and rounded at apex, spermathecal duct slender and strongly curved at base (Fig. 7C). Vaginal palps with wide base, anteriorly with subtriangular tip, each palp slightly narrowing posteriorly, with pointed apex, 5 setae placed at apex, additional 2 setae subapically (Fig. 7I).

Remarks. When the genus was introduced, the type species *E. ornata* was feminine in the combination, making the genus gender feminine. So, we presently modify *E. nigrinotum* to *E. nigrinota*, and *E. simulonigrinotum* to *E. simulonigrinota*.

Yang (1992) described *E. simulonigrinota* (Fig. 2D) from Hunan based on single holotype, and *E. simulonigrinota* differs from *E. nigrinota* in dorsal surface of the pronotum without punctures, abdominal ventrite 1 without a pair of clavate protrusions. However, by examining the type specimens of both species, we found that both of them have punctures on pronotum, with two small pointed protrusions on ventrite 1 (Figs 5C–D), and have the same structure of male genitalia (Figs 6C–D). So, we proposed *E. simulonigrinota* as a new junior synonym of *E. nigrinota*.

Distribution (Fig. 1). China: Zhejiang, Hunan, Fujian (this paper).

Euliroetis ornata (Baly, 1874)

(Figs 2E, 3G, 4E, 5E, 6E, 7D, 7J)

Aenidea ornata Baly 1874: 180. TL China: Shanghai, Japan: Nagasaki. TD BMNH, MNHN, ZMH.

Phyllobrotica ornata Jacoby 1888: 349. Synonymized by Gressitt & Kimoto 1963: 504.

Liroetis ornata Laboissière 1929: 277 (nec Baly, 1874).

Liroetis abdominalis Laboissière 1929: 278. Synonymized by Gressitt & Kimoto 1963: 505.

Euliroetis ornata: Ogloblin 1936: 201, Gressitt & Kimoto 1963: 504 (noted); Yang 1992: 563 (noted); Yu, Wang & Yang 1996: 134 (noted); Wang & Yang 1998: 81 (new distribution); Beenen 2010: 474 (catalog); Yang 2015: 225 (catalog); Beenen 2024: 432 (catalog).

Type specimens examined. 1♂, SYNTYPE. *ornata*. Nagasaki. Japan. G. Lewis. 1910-320. NHMUK014596782; BMNH. **Other specimens examined.** 4♀♀, CHINA, Jiangsu Province, Nanjing; 30 Apr. 1935; IZCAS. 1♂1♀, CHINA, Anhui Province, Huangshan, Jun. 2023. 1♂, CHINA, Zhejiang Province, Qingyuan, Baishanzu; 300 m a. s. l.; 18 Apr. 1994; Hong Wu leg.; IZCAS. 5♀♀, CHINA, Fujian Province, Jianyang, Huangkeng; 950 m a. s. l.; 26 May 1973; Pei-Yu Yu leg.; IZCAS. 2♂♂6♀♀, idem.; 28 May 1973; Pei-Yu Yu leg.; IZCAS. 2♀♀, idem.; 5 Jun. 1973; Pei-Yu Yu leg.; IZCAS. 15♂♂25♀♀, idem.; 30 May 1960; Yong Zuo leg.; IZCAS. 5♀♀, idem.; 850 m a. s. l.; 5 May 1960; Sheng-Qiao Jiang leg.; IZCAS. 8♂♂10♀♀, idem.; 900 m a. s. l.; 26 Apr. 1960; Sheng-Qiao Jiang leg.; IZCAS. 8♂♂10♀♀, idem.; 3 May 1960; Sheng-Qiao Jiang leg.; IZCAS. 6♂♂10♀♀, idem.; 7 May 1960; Sheng-Qiao Jiang leg.; IZCAS. 2♂♂3♀♀, CHINA, Guangdong Province, Nanling, Chengjia; 720 m a. s. l.; 26 May 2022; Chuan Feng leg.; IZCAS. 1♂2♀♀, CHINA, Guangxi Province, Longzhou, 300 m a. s. l.; 24 Apr. 1965; Shu-Yong

Wang leg.; IZCAS. 1♂1♀, CHINA, Sichuan Province, Mount Emei, Qingyin'ge; 13 Jul. 1957; Ke-Ren Huang leg.; IZCAS. 1♀, CHINA, Guizhou Province, Leigongshan; 1550 m a. s. l.; 29 Jun. 1988; Xing-Ke Yang leg.; IZCAS.

Redescription. Male (Fig. 2E). Length 4.0–7.0 mm, width 2.0–3.4 mm. Antennae brown with antennomeres 1–3 reddish brown. Head, pronotum, scutellum, and abdomen orange or reddish brown. Elytra variable, usually black with two yellow spots, one spot or one longitudinal stripe; but yellow in some specimens with all elytral margins black. Femur and tibia externally brown or black and internally yellow, tarsus and claw brown. Head smooth, impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.8× as long as antennomeres 2, antennomere 4 slightly longer than antennomere 3, antennomere 3 and antennomeres 5–11 equal in length. Pronotum 1.5× as wide as long, disc sparsely covered with small punctures, with a slight depression at each side behind middle. Scutellum triangular, with rounded apex, smooth, and impunctate. Elytra wider than pronotum, 0.75× as long as body, 2.2× as long as wide, dorsal surface covered with large and deep punctures, interstices of punctures narrower than diameter of punctures. Abdominal ventrites 1 and 2 both with one pair of subtriangular protrusions at center, extending to posterior; protrusions on ventrite 2 long covered ventrite 3; ventrites 3–5 with a deep medial concavity, lateral portions strongly curved to center; pygidium deflexed posteriorly (Figs 4E, 5E). Aedeagus widest at apex, gradually narrowed towards base; base with a shallow notch; strongly bifurcated from middle to apex; distinctly bent in lateral view (Fig. 6E).

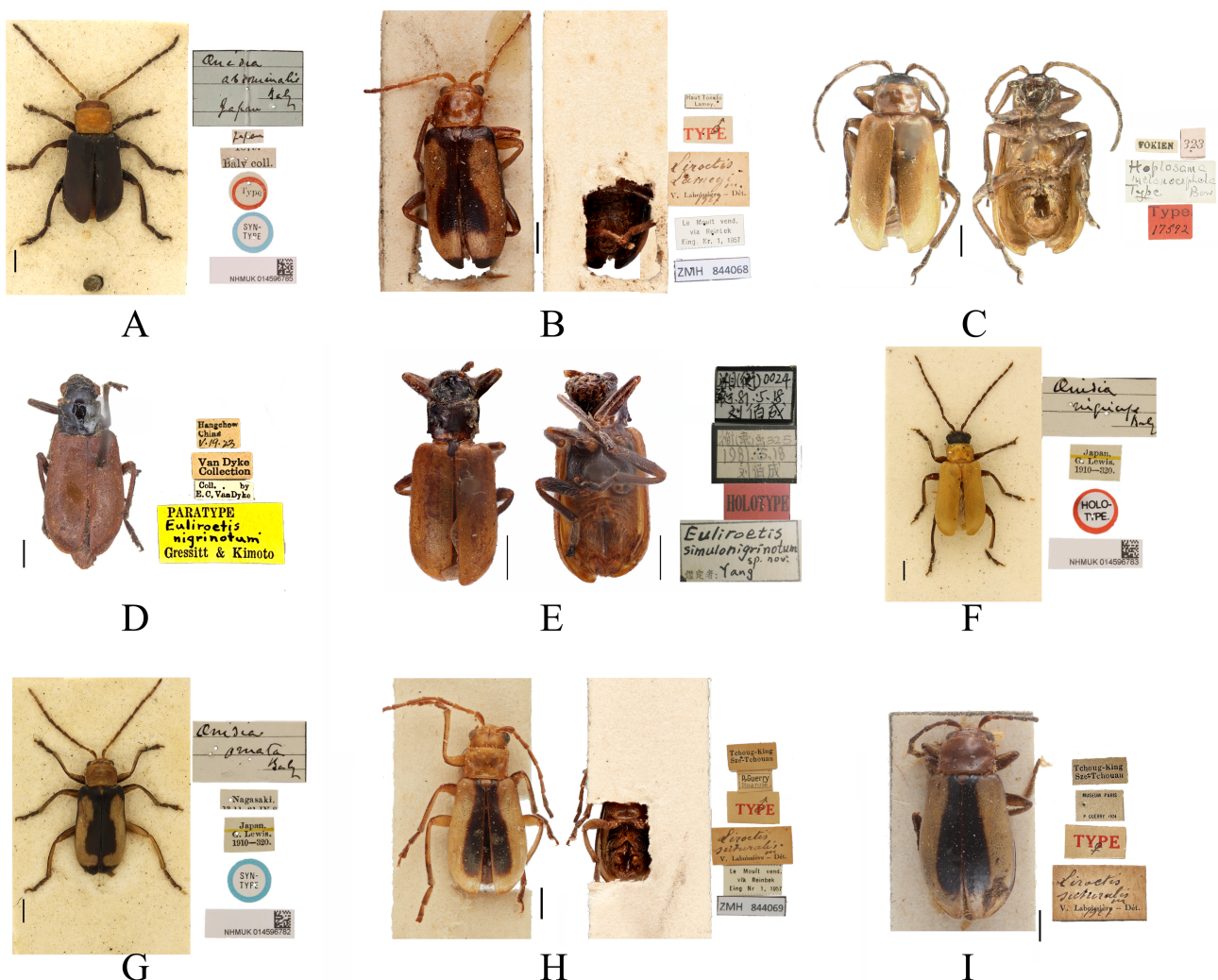


FIGURE 3. Type specimens. **A.** *Aenidea abdominalis* Baly, 1874 (SYNTYPE). **B.** *Liroetis lameyi* Laboissière, 1929 (SYNTYPE). **C.** *Hoplosoma melanocephala* Bowditch, 1925 (HOLOTYPE). **D.** *Euliroetis nigrinota* Gressitt et Kimoto, 1963 (PARATYPE). **E.** *Euliroetis nigrinota* (HOLOTYPE of *Euliroetis simulonigrinota*). **F.** *Aenidea nigripes* Baly, 1874 (HOLOTYPE). **G.** *Aenidea ornata* Baly, 1874 (SYNTYPE). **H.** *Liroetis suturalis* Laboissière, 1929 (SYNTYPE). **I.** *Liroetis suturalis* Laboissière, 1929 (SYNTYPE). Scale bars: 1 mm.

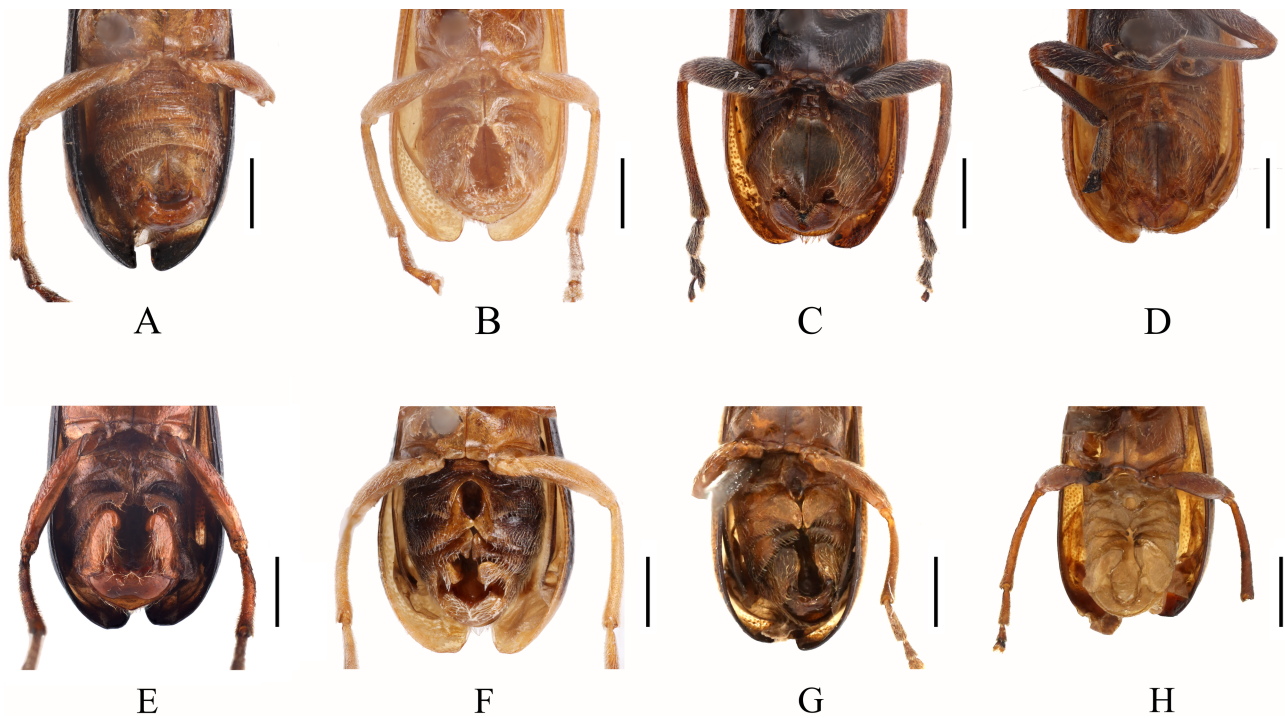


FIGURE 4. Photos of abdomen of *Euliroetis*. **A.** *Euliroetis lameyi*. **B.** *Euliroetis melanocephala*. **C.** *Euliroetis nigrinota*. **D.** *Euliroetis nigrinota* (HOLOTYPE of *Euliroetis simulonigrinota*). **E.** *Euliroetis ornata*. **F.** *Euliroetis suturalis*. **G.** *Euliroetis tenuis* sp. nov. **H.** *Euliroetis testacea* sp. nov. Scale bars: 1 mm.

Female. Length 4.2–7.2 mm, width 2.2–3.4 mm. Ventrites 1 and 2 without subtriangular protrusions, ventrites 3–5 without incisions. Spermatheca with slightly widened nodulus, middle part widened, cornu strongly curved and rounded at apex, spermathecal duct slender and slightly curved at base (Fig. 7D). Vaginal palps with a wide base, anteriorly with a subtriangular tip, each palp slightly narrowing posteriorly, with a rounded apex, 5 setae placed at apex, and an additional 2 setae subapically (Fig. 7J).

Distribution (Fig. 1). China: Jiangsu, Anhui, Zhejiang, Fujian, Guangdong, Guangxi, Sichuan, Guizhou (this paper), Heilongjiang, Jilin, Liaoning, Shaanxi, Shanghai, Jiangxi, Hunan; Russia, Korea, Japan (Yang *et al.* 2015).

***Euliroetis suturalis* (Laboissière, 1929)**

(Figs 2F, 3H, 3I, 4F, 5F, 6F, 7E, 7K)

Liroetis suturalis Laboissière 1929: 279. **TL** China: Sichuan. **TD** MNHN, ZMH.

Euliroetis suturalis: Ogloblin 1936: 202; Gressitt & Kimoto 1963: 505 (noted); Yang 1992: 563 (noted); Yu, Wang & Yang 1996: 134 (noted); Wang & Yang 1998: 81 (new distribution); Beenen 2010: 474 (catalog); Yang 2015: 225 (catalog); Beenen 2024: 432 (catalog).

Type specimens examined. 1♂, SYNTYPE. Tchoug-King Sze-Tchouan. P. Guerry Roanne. TYPE *Liroetis suturalis* Laboissière Det. Le Moulnt vend. via Reinbek Eing Nr 1, 1957. ZMH 844069; ZMH. 1♀, SYNTYPE. Tchoug-King Sze-Tchouan. MUSEUM PARIS. PCUERRY 1924. TYPE *Liroetis suturalis* Laboissière, 1929- Det.; MNHN. **Other specimens examined.** 2♀♀, CHINA, Gansu Province, Bifenggou; 1450 m a. s. l.; 25 Jun. 1998; Xing-Ke Yang leg.; IZCAS. 1♂, CHINA, Hubei Province, Longmenhe; 730 m a. s. l.; 22 Jun. 1993; Jian Yao leg.; IZCAS. 2♂♂8♀♀, CHINA, Sichuan Province, Mount Emei, Qingyin'ge; 800 m a. s. l.; 8 May 1959; You-Cai Yu leg.; IZCAS. 3♂♂7♀♀, idem.; 9 May 1957; Zong-Yuan Wang leg.; IZCAS. 3♂♂8♀♀, CHINA, Sichuan Province, Mount Emei, Baogوسي; 550 m a. s. l.; 3 May 1957; Ke-Ren Huang leg.; IZCAS. 1♀, CHINA, Guizhou Province, Xishui; 500 m a. s. l.; 28 May 2000; Zi-Zhong Li leg.; IZCAS.

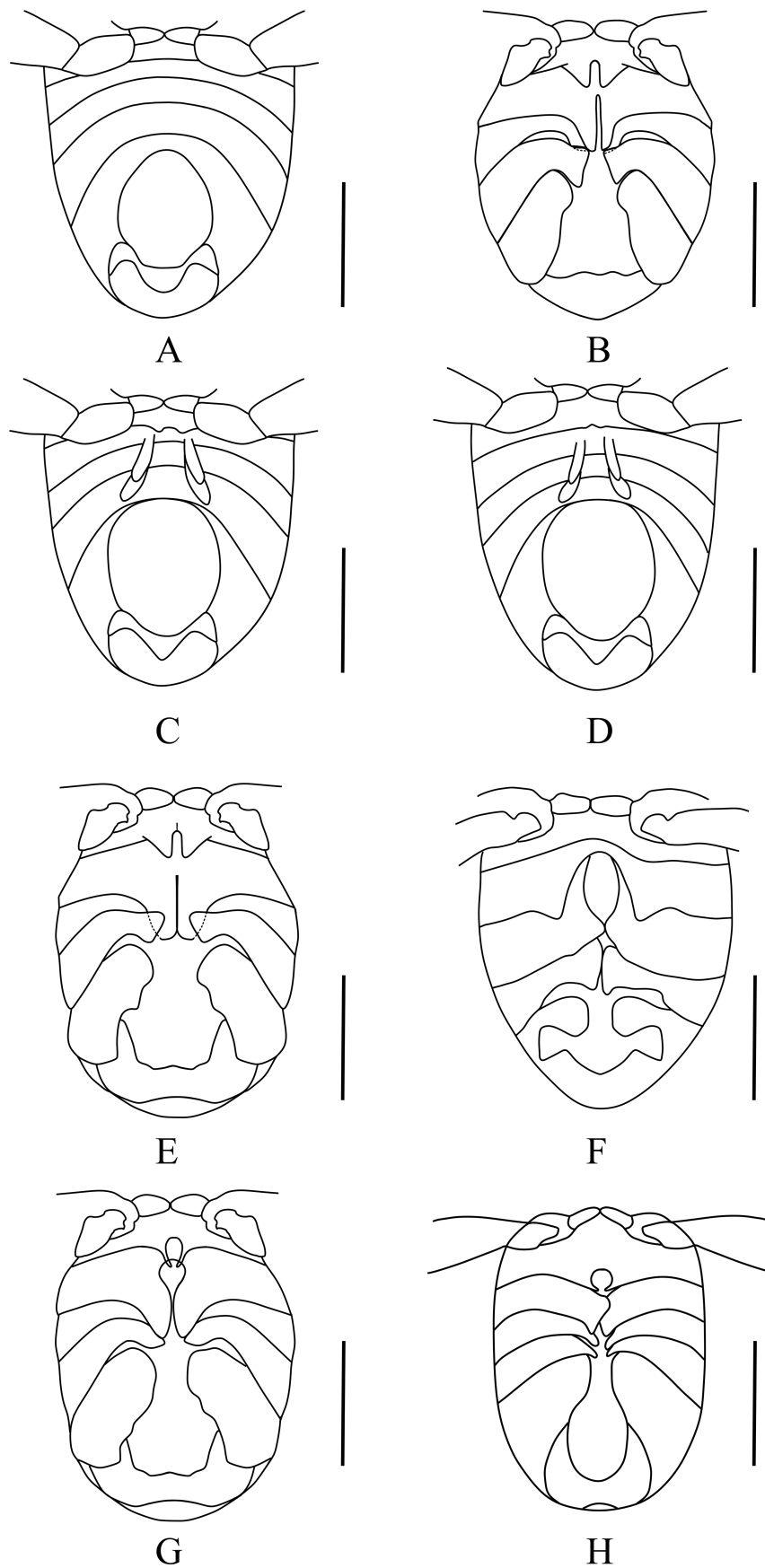


FIGURE 5. Line drawings of abdomen of *Euliroetis*. **A.** *Euliroetis lameyi*. **B.** *Euliroetis melanocephala*. **C.** *Euliroetis nigrinota*. **D.** *Euliroetis nigrinota* (HOLOTYPE of *Euliroetis simulonigrinota*). **E.** *Euliroetis ornata*. **F.** *Euliroetis suturalis*. **G.** *Euliroetis tenuis* sp. nov. **H.** *Euliroetis testacea* sp. nov. Scale bars: 1 mm.

Redescription. Male (Fig. 2F). Length 3.9–6.0 mm, width 2.1–3.1 mm. Antennae brown with antennomeres 1–3 yellow. Head, pronotum, scutellum, elytra, and abdomen yellow, elytral lateral margins and suture from base to subapical black. Femur and tibia outside brown inside yellow, tarsus and claw brown. Head smooth and impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.5× as long as antennomeres 2, antennomere 4 slightly longer than antennomere 3, antennomere 3 and antennomeres 5–11 equal in length. Pronotum 1.4× as wide as long, gradually narrowed towards base, disc smooth, impunctate, with a pair of shallow impressions in middle. Scutellum semicircular, smooth, impunctate. Elytra wider than pronotum, 0.75× as long as body, 2× as long as wide, dorsal surface covered with small punctures, interstices of punctures equal to diameter of individual punctures. Abdominal ventrites 2–5 with a deep medial concavity; ventrite 2 with a pair of sub-triangular protrusions at center, extending to posterior; ventrite 3 with a pair of semicircular protrusions; ventrites 4–5 with lateral portions strongly curved to center; pygidium deflexed posteriorly (Figs 4F, 5F). Aedeagus widest at apex, narrowed towards base; base with a shallow notch; only apex bifurcated; distinctly bent in lateral view (Fig. 6F).

Female. Length 4.0–6.2 mm, width 2.2–3.0 mm. Ventrites 2–3 without protrusions, ventrites 1–5 without incisions. Spermatheca with a slightly widened nodulus, middle part widened, cornu narrowed and curved, spermathecal duct slender and slightly curved in middle (Fig. 7E). Vaginal palps wide at base, anteriorly with subtriangular tip, each palp slightly extended subapically, with pointed apex, without setae (Fig. 7K).

Distribution (Fig. 1). China: Gansu, Hubei, Sichuan, Guizhou (this paper), Jiangsu, Hunan, Fujian, Yunnan (Yang *et al.* 2015).

***Euliroetis tenuis* Feng et Yang, sp. nov.**

(Figs 2G, 4G, 5G, 6G, 7F, 7L)

Type materials. HOLOTYPE: CHINA: ♂, CHINA, Guangxi Province, Jinxiu, Jinzhonggonglu; 1100 m a. s. l.; 12 May 1999; Hui Xiao leg.; IZCAS. **PARATYPES: CHINA:** 3♀♀, CHINA, Guangdong Province, Nanling, Chengjia; 720 m a. s. l.; 26 May 2022; Chuan Feng leg.; IZGAS. ♂, CHINA, Guangxi Province, Jinxiu, Yonghe; 500 m a. s. l.; 11 May 1999; Hui Xiao leg.; IZCAS. 5♀♀, idem.; Fu-Sheng Huang leg.; IZCAS. 3♀♀, CHINA, Guangxi Province, Jinxiu; 600 m a. s. l.; 20 May 1999; Xing-Ke Yang leg.; IZCAS.

Diagnosis. This new species closely resembles *Euliroetis ornata* in spots of the elytra, and it is different in that the elytra is brown and black at the apex, abdominal ventrite 1 with a pair of elongated protrusions in the middle, rather than triangular protrusions. Aedeagus with a deep bifurcate at the apex and curved towards the middle. The new species also closely resembles *E. testacea* sp. nov., it is different with the antennomere 3 approximately 1.3× as long as antennomeres 2, and ventrite 1 with a pair of slender protrusions, elongate and directed backwards.

Description. Male (Fig. 2G). Length 4.5–4.7 mm, width 2.4–2.5 mm. Antennae black brown with antennomeres 1–4 reddish brown. Head, pronotum, and scutellum reddish brown, ventral surface of body brown. Elytra brown with apex black, each elytron with two yellow spots. Femur and tibia externally reddish brown internally brown, tarsus and claw reddish brown. Head smooth, impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.3× as long as antennomeres 2, antennomere 4 slightly longer than antennomere 3, antennomeres 5–11 equal in length. Pronotum 1.3× as wide as long, disc sparsely covered with small punctures, with transverse furrow in middle. Scutellum triangular, with a rounded apex, smooth, and impunctate. Elytra wider than pronotum, 0.75× as long as body, 2.2× as long as wide, dorsal surface covered with deep punctures, interstices of punctures slightly wider than diameter of punctures. Abdominal ventrite 1 with a pair of slender protrusions at center, elongate and directed backwards, ventrites 2–5 with a deep medial concavity, ventrite 2 with 2 broad protrusions strongly extending to posterior covering ventrite 3; ventrites 3–5 lateral portions strongly curved to center; pygidium deflexed posteriorly (Figs 3G, 4G). Aedeagus widest in middle, gradually narrowed towards base; apex bifurcated, and curved towards middle; distinctly bent in lateral view.

Female. Length 4.8–5.2 mm, width 2.5–2.8 mm. Abdominal ventrites 1–5 without modification and concavity. Spermatheca with a widened nodulus, middle part slightly narrowed, cornu narrowed and curved, spermathecal duct slender and slightly curved at base (Fig. 7F). Vaginal palps wide at base, anteriorly with subtriangular tip, each palp slightly narrowing posteriorly, with a rounded apex, 5 setae placed at apex, additional 2 setae subapically (Fig. 7L).

Distribution (Fig. 1). China: Guangdong, Guangxi (this paper).

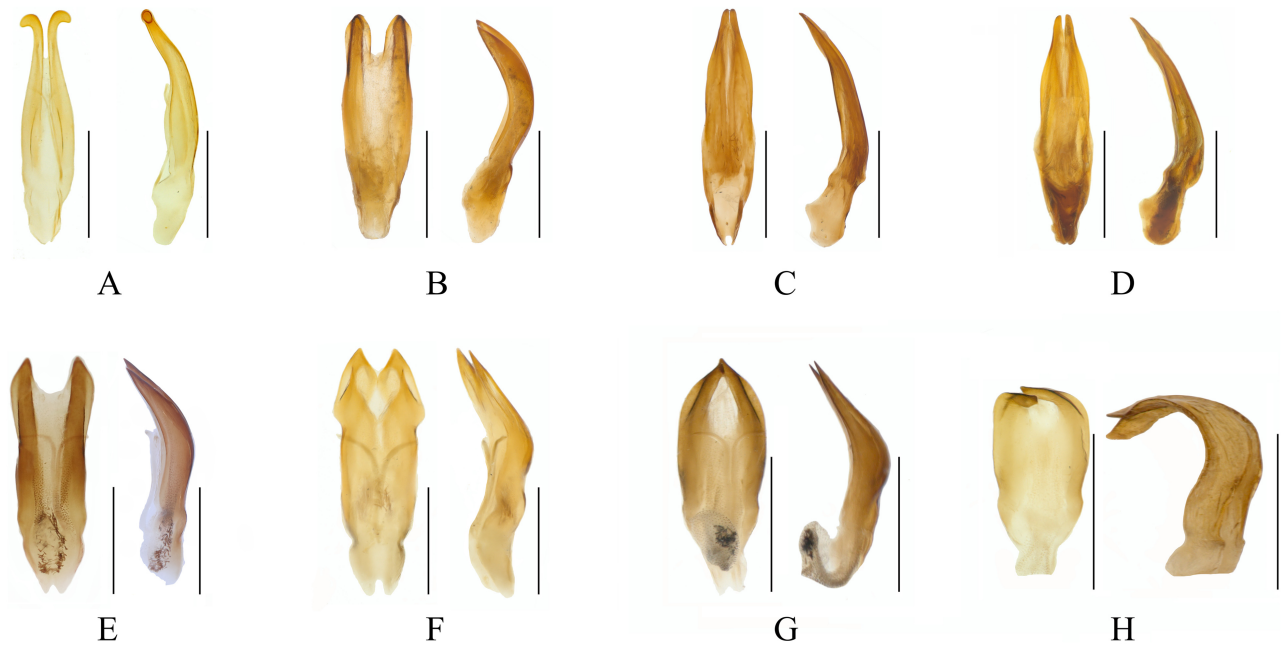


FIGURE 6. Aedeagus of *Euliroetis*. **A.** *Euliroetis lameyi*. **B.** *Euliroetis melanocephala*. **C.** *Euliroetis nigrinota*. **D.** *Euliroetis nigrinota* (HOLOTYPE of *Euliroetis simulonigrinota*). **E.** *Euliroetis ornata*. **F.** *Euliroetis suturalis*. **G.** *Euliroetis tenuis* **sp. nov.** **H.** *Euliroetis testacea* **sp. nov.** Scale bars: 0.5 mm.

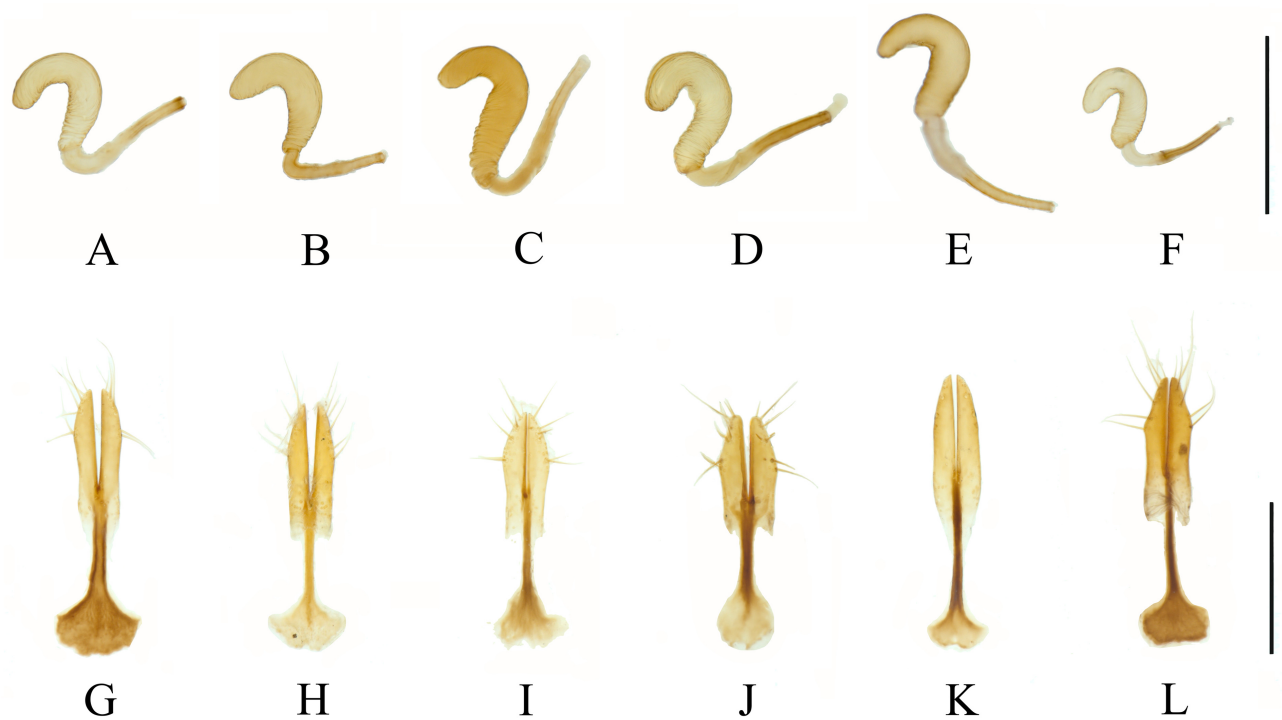


FIGURE 7. Spermatheca and vaginal palps of *Euliroetis*. **A–F.** Spermatheca: **A.** *Euliroetis lameyi*. **B.** *Euliroetis melanocephala*. **C.** *Euliroetis nigrinota*. **D.** *Euliroetis ornata*. **E.** *Euliroetis suturalis*. **F.** *Euliroetis tenuis* **sp. nov.** **G–L.** Vaginal palps: **G.** *Euliroetis lameyi*. **H.** *Euliroetis melanocephala*. **I.** *Euliroetis nigrinota*. **J.** *Euliroetis ornata*. **K.** *Euliroetis suturalis*. **L.** *Euliroetis tenuis* **sp. nov.** Scale bars: 1 mm.

Euliroetis testacea Feng et Yang, sp. nov.

(Figs 2H, 4H, 5H, 6H)

Type material. HOLOTYPE: CHINA: ♂, CHINA, Guangxi Province, Jinxiu, Yonghe; 500 m a. s. l.; 12 May 1999; Hong-Xiang Han leg.; IZCAS.

Diagnosis. This new species closely resembles *E. tenuis* sp. nov., its antennomere 3 approximately 1.65× as long as antennomeres 2, and abdominal ventrite 1 with a pair of triangular protrusions, ventrite 2 of *E. testacea* sp. nov. wider than that of *E. tenuis* sp. nov. Whereas in *E. tenuis* sp. nov., antennomere 3 approximately 1.3× as long as antennomeres 2, ventrite 1 with a pair of slender protrusions, elongate and directed backwards. The new species, *E. testacea* sp. nov., also closely resembles *E. melanocephala* in color of elytra. The new species is different with black brown antennae; antennomeres 1–3 reddish brown, apex of elytra black, abdominal ventrite 1 with a pair of curved hooks that protrude in middle, and a strongly bent aedeagus in middle.

Description. Male (Fig. 2H). Length 4.7 mm, width 2.5 mm. Antennae brick red with antennomeres 1–3 reddish brown. Head, pronotum, scutellum, and leg reddish brown, ventral surface of body brown, elytra brown with apical part of sutural margin and apex black. Head smooth, and impunctate. Antennae slender, 0.8× as long as body; antennomere 2 shortest, antennomere 3 approximately 1.65× as long as antennomeres 2, antennomere 4 slightly longer than antennomere 3, antennomeres 5–11 equal in length. Pronotum 1.4× as wide as long, disc sparsely covered with small punctures, with transverse furrow in middle. Scutellum semicircular, with rounded apex, smooth, and impunctate. Elytra wider than pronotum, 0.7× as long as body, 2.3× as long as wide, dorsal surface covered with deep punctures, and interstices of punctures slightly wider than diameter of punctures. Abdominal ventrite 1 with a pair of triangular protrusions and directed towards each other, extending to posterior; ventrites 2–5 with a deep medial concavity, lateral portions strongly curved to center; pygidium deflexed posteriorly, protrusions on ventrite 2 longer than ventrites 3–5 (Figs 4H, 5H). Aedeagus widest in middle, gradually narrowed towards base; apex bifurcated, and curved towards middle; strongly bent in lateral view (Fig. 6H).

Female. Unknown.

Etymology. The species name refers to the brick red antennal color.

Distribution (Fig. 1). China: Guangxi (this paper).

Key to the species of *Euliroetis*

- | | | |
|---|---|---|
| 1 | Elytron unicolorous (Figs 2B–D, 3A, 3C–F) | 2 |
| - | Elytron with spots, stripes or darkened margins (Figs 2A, E–H, 3B, 3G–I) | 5 |
| 2 | Elytron black (Fig. 3A) or reddish brown (Fig. 3D) | 3 |
| - | Elytron yellow or yellow brown (Fig. 3C, 3F) | 4 |
| 3 | Elytron black, head and pronotum reddish brown (Fig. 3A). Japan (Beenen 2010) | <i>E. abdominalis</i> |
| - | Elytron reddish brown, head and pronotum black (Fig. 3D). China (see above) | <i>E. nigrinota</i> |
| 4 | Head black, legs black brown (Fig. 3F). Japan (Baly 1874) | <i>E. nigripes</i> |
| - | Head reddish brown, legs yellow brown. China (see above) | <i>E. melanocephala</i> |
| 5 | Only ventrite 5 with medial concavity (Fig. 4A). China (see above) | <i>E. lameyi</i> |
| - | Several ventrites with deep medial concavity (Fig. 4E–H) | 6 |
| 6 | Ventrite 1 normal (Fig. 4F). Elytron with sutural part of elytra largely black, apical part without black markings (Fig. 2F). China (see above) | <i>E. suturalis</i> |
| - | Ventrite 1 with modification (Fig. 4E, G, H) | 7 |
| 7 | Ventrites 1 and 2 with pair of subtriangular protrusions (Fig. 4E). China (see above) | <i>E. ornata</i> |
| - | Ventrite 1 with slender protrusions or curved hooks | 8 |
| 8 | Ventrite 1 with a pair of slender protrusions (Fig. 5G), elongate and directed backwards. China (see above) | <i>E. tenuis</i> Feng et Yang, sp. nov. |
| - | Ventrite 1 with a pair of triangular protrusions (Fig. 5H) and directed towards each other. China (see above) | <i>E. testacea</i> Feng et Yang, sp. nov. |

Discussion

Considering the two new species described in this study, there are now seven *Euliroetis* species described from China and nine species from around the world. Among them, elytra of *E. ornata* come in a variety of color types,

one of which has elytra that are yellow with all margins black, including the suture of elytra being black. *E. tenuis* sp. nov. is hidden in this color type of *E. ornata*. Despite *E. ornata* having a variety of color types, all color types share the same characteristics on the abdomen and aedeagus.

This genus is similar to *Japonitata* Strand, 1935 and *Phyllobrotica* Chevrolat, 1836. We examined some Chinese specimens of *Japonitata* and *Phyllobrotica*, and found that in *Euliroetis* the posterolateral area of pronotum possess a rectangular or orthogonal incision (present also in some species of *Japonitata* and *Phyllobrotica*). *Euliroetis* have a distinct epipleuron (*Phyllobrotica* species lack the distinct epipleuron), does not have ridges on the elytra (*Japonitata* possess distinct ridges on the elytra). However, some species of *Phyllobrotica* have a distinct epipleuron, and some *Japonitata* species lack distinct ridges. These specimens may require reevaluation; they could potentially belong to *Euliroetis*.

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中国攸萤叶甲属 *Euliroetis* 修订及二新种描述 (鞘翅目: 叶甲科: 萤叶甲亚科)

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摘要: 在检视已知种模式标本基础上, 根据雄性和雌性外生殖器结构和其他特征, 对攸萤叶甲属 *Euliroetis* 进行了分类修订。重新描述了中国记录的5种攸萤叶甲, 提出拟黑胸攸萤叶甲 *E. simulonigrinota* Yang, 1992 是黑背攸萤叶甲 *E. nigrinota* Gressitt et Kimoto, 1963 的新异名, 还描述了两新种: 褐角攸萤叶甲 *E. testacea* Feng et Yang, **sp. nov.** 和细棒攸萤叶甲 *E. tenuis* Feng et Yang, **sp. nov.**。此外, 提供了所有雄性的整体照、两性外生殖器照片、雄性腹部特征照片和手绘线条图以及攸萤叶甲属分种检索表。

关键词: 叶甲; 南岭; 新异名; 分类学