

# One new species of the genus *Clemelis* Robineau-Desvoidy (Diptera: Tachinidae) from China, and a revised synonym

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**Abstract:** The known species in the genus *Clemelis* Robineau-Desvoidy, 1863 from China are reviewed and one new species from Shanxi, *C. xuei* **sp. nov.**, is described and illustrated. *Clemelis jingentaoui*, Zhang & Hao, 2019 is a synonym of *Austrophorocera hirsute* (Mesnil, 1946), **syn. nov.** A key to the two Chinese species is provided.

**Key words:** tachinid fly; morphology; new taxon; key

中国卷须寄蝇属 *Clemelis* 一新种及一异名 (双翅目: 寄蝇科)

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**摘要:** 修订了中国卷须寄蝇属, 并记述产自山西的 1 新种: 薛氏卷须寄蝇 *Clemelis xuei* **sp. nov.**, 提供了新种的形态描述和特征图。同时订正了该属的 1 个同物异名。编制了该属中国种类检索表。

**关键词:** 寄蝇; 形态学; 新阶元; 检索表

## Introduction

*Clemelis* was erected by Robineau-Desvoidy in 1863 based on the type species *Zenillia ciligera* Robineau-Desvoidy, 1830 (= *Tachinia pullata* Meigen, 1824). It belongs to the tribe Goniini of subfamily Exoristinae (Diptera: Tachinidae) with seven species and has a wide distribution in the Palearctic Region (Herting 1984; Herting & Dely-Draskovits 1993; O'Hara *et al.* 2020a). *C. atricans* Herting, 1975 was synonymed to *Elodia* Robineau-Desvoidy, 1863 by O'Hara *et al.* (2020a). Now six described species in the world are from the Palearctic Region, although *C. pullata* is distributed in both the Palearctic and Oriental Regions in China (Chao & Zhou 1993; O'Hara *et al.* 2009, 2020b).

Adults in this genus can be distinguished from members of other genera by the combination of the following characters: two reclinate upper orbital bristles present, the anterior one at least as large as the posterior one, ocellar bristles well-developed, about as

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long as uppermost reclinate orbital bristle, scutellum at least reddish yellow near apex, short lateral scutellar seta about as long as half of subapical scutellar seta, with crossed apical scutellar setae or absent, mid tibia with a single anterodorsal bristle, abdominal tergites with broad transverse bands of dense pruinescence or abdomen uniformly covered with dense pruinescence, tergites 3 and 4 of male usually with a narrow median longitudinal stripe of short recumbent hairs (Tschorsnig & Richter 1998). Hence, we reviewed the holotype specimen of *C. jingentaoui* Zhang & Hao, 2019 (Hao & Zhang, 2019). This species has the same characters of *Austrophorocera hirsuta* (Mesnil, 1946), and we propose *C. jingentaoui* Zhang & Hao, 2019 is a synonym of *A. hirsuta* (Mesnil, 1946), **syn. nov.** Before this work, only one species of *Clemelis* has been recorded in China (Chao & Zhou 1993; Chao *et al.* 1998; O'Hara *et al.* 2009, 2020b; Zhang *et al.* 2016).

Herein, we study the genus *Clemelis* from China. In this paper, a new species of *Clemelis* is described and one new synonym is proposed. A key to the two species of *Clemelis* from China is presented.

## Material and methods

Specimens were examined and illustrated with an Olympus SZX7 stereomicroscope for external morphological features. The specimens were photographed with a Canon EOS 5D Mark III camera and stacked with Helicon Focus Software and treated with Adobe Photoshop CC for labelling and plate composition. Genitalia preparations were made by softening the apical portion of the abdomen in warm 10% NaOH for 17–20 minutes, and then washing in distilled water. After examination, they were transferred to fresh glycerine and stored in a microvial pinned below the specimens. The specimens examined, including holotype and paratypes, are deposited in the Collection of Insects, Shenyang Normal University, Shenyang, Liaoning, China (SYNU) and Staatliches Museum für Naturkunde, Stuttgart, Germany (SMNS).

Morphological terminology follows Cumming and Wood (2017). Body length was measured in millimeters (mm) from the anterior margin of the head without antenna to the apex of the abdomen. The following abbreviations are used in the text: ad s — anterodorsal seta(e); av s — anteroventral seta(e); acr s — acrostichal seta(e); d — dorsal seta(e), dc s — dorsocentral seta(e); dm-cu — discal medial-cubital crossvein; fr s — frontal seta(e); i vt s — inner vertical seta(e); ial s — intra-alar seta(e); npl s — notopleural seta(e); o vt s — outer vertical seta(e); oc s — ocellar seta(e); p s — posterior seta(e); pd s — posterodorsal seta(e); pv s — posteroventral seta(e); poc s — postocellar seta(e); pprn s — postpronotal seta(e); R<sub>4+5</sub> — third branch of radius; r-m — radial-medial crossvein; sbvb — subvibrissal seta(e); u vt s — upper vertical seta(e); v s — ventral seta(e).

## Taxonomy

### Genus *Clemelis* Robineau-Desvoidy, 1863

*Clemelis* Robineau-Desvoidy, 1863: 481. Type species: *Zenillia ciligera* Robineau-Desvoidy, 1830 (=

*Tachina pullata* Meigen, 1824), by original designation.

*Tritochaeta* Brauer & Bergenstamm, 1889: 92. Type species: *Tritochaeta prosopoides* Brauer & Bergenstamm, 1889 (= *Tachina pullata* Meigen, 1824).

*Clemelis*: Mesnil, 1954: 349; Mesnil, 1970: 107; Herting, 1972: 12; Herting, 1975: 3; Herting, 1977: 7; Herting, 1984: 66; Herting & Dely-Draskovits, 1993: 231; Chao *et al.*, 1998: 1929; O'Hara *et al.*, 2009: 105; Zhang *et al.*, 2016: 387; O'Hara *et al.*, 2020a: 440; O'Hara *et al.*, 2020b: 902.

Type species: *Clemelis pullata* (Meigen, 1824).

### Key to Chinese species of genus *Clemelis* Robineau-Desvoidy

1. Costal spine developed, slightly longer than r-m, fore tibia with 2 p s, mid tibia with a row of ad s, sternite 5 nearly round, tergite 3 and 4 without median discal seta..... *C. xuei* sp. nov.
- Costal spine not developed, fore tibia with 1 p s, mid tibia with 2 ad s, sternite 5 nearly square, tergite 3 and 4 with a pair of median discal seta ..... *C. pullata* (Meigen)

### *Clemelis pullata* (Meigen, 1824) (Fig. 1)

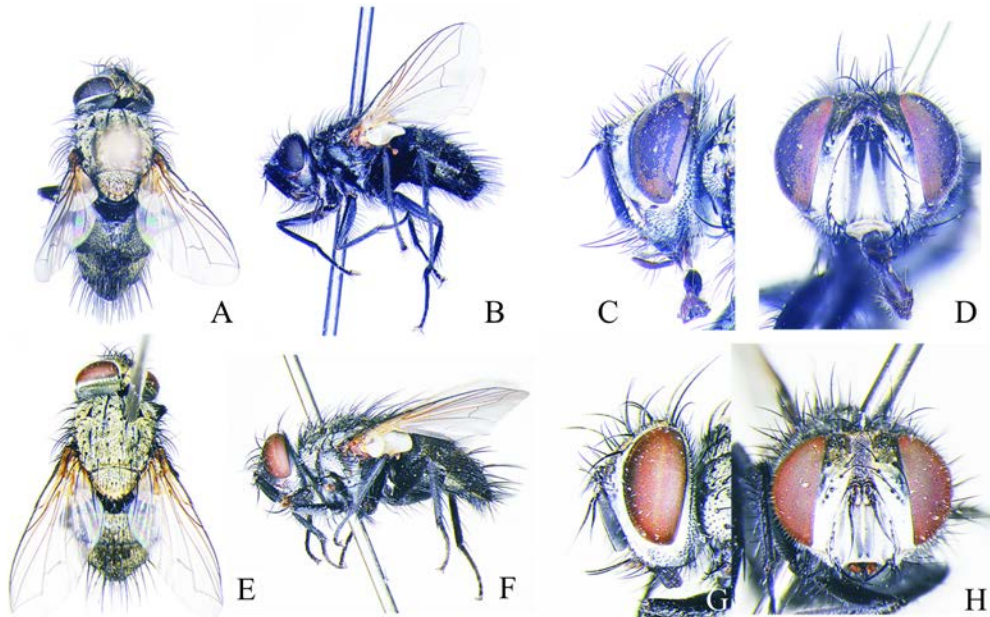


Figure 1. *Clemelis pullata* (Meigen, 1924). A–D. ♂; E–H. ♀; A, E. Bodies, dorsal views; B, F. Bodies, lateral views; C, G. Heads, lateral views; D, H. Heads, anterior views.

**Specimens examined.** China, Inner Mongolia, 1♂1♀, Hinggan League, 20-VII-2009, Hatched. 1♀, Alxa Left Banner, Helan Mountain, Alawu, 2,200–2,800 m, 25–28-VII-2010, Shidi WANG & Zhe ZHAO. 8♂4♀, Alxa Left Banner, Helan Mountain, Gulaben, 2,050–2,350 m, 29-VII–03-VIII-2010, Shidi WANG & Zhe ZHAO. 1♂, Alxa Left Banner, Helan Mountain, Yaoba, 2,200–2,350 m, 03–06-VIII-2010, Shidi WANG & Zhe ZHAO. 1♂, Alxa Left Banner, Helan Mountain, Shuimogou, 2,300–2,600 m, 07–12-VIII-2010, Shidi WANG & Zhe ZHAO. 3♂1♀, Alxa Left Banner, Helan Mountain, Xuelingzi, 2,550–2,650 m, 15-VIII-2010, Shidi WANG & Zhe ZHAO. 4♂, Alxa Left Banner, Helan Mountain, Hougou,

2,400–2,600 m, 16–17-VIII-2010, Shidi Wang & Zhe ZHAO. 3♂, Alxa Left Banner, Helan Mountain, Shuimogou, Hougou, 2,300–2,700 m, 11-VIII-2011, Hai LIN. 1♂, Alxa Left Banner, Helan Mountain, Shuimogou, Hougou, 2,300–2,700 m, 11-VIII-2011, Chen TAN. 1♂, Alxa Left Banner, Helan Mountain, Nansi, 2,100–2,600 m, 11-VIII-2011, Chen TAN. 5♂3♀, Erenhot, 14-VII-2024, Xin MA. Hebei, 3♂1♀, Kangbao County, 17-IV-2011, Hatched (SYNU). **Spain**, 1♀, Salamanca Villar de Ciervo, P. Quebrada, 30-V-1999, leg. Tschorsnig (SMNS). **France**, 1♂, H.-Alpes, Val Biaysee, les Mensals, 11-VIII-1998, leg. Tschorsnig (SMNS).

Distribution. China (Heilongjiang, Jilin, Liaoning, Inner Mongolia, Hebei, Xinjiang, Qinghai, Tibet); Mongolia; Russia; Central Asia; Israel; Morocco; Armenia; Europe.

Diagnosis. Male (Figs 1A–D). Fronto-orbital plate, parafacial, face brown, frons about 0.37–0.38 of head width, fronto-orbital plate with 2 rows of slender hairs, with two pairs of *uvt* s, facial ridge with 7–10 setae on lower 2/3, occiput with a row setae at below *poc* s, antennal first flagellomere about 4.0–5.0 times as long as pedicel. Three *pprn* s arranged in a straight line; tegula and basicosta black; costal spine not developed, the length between vein M and wing posterior margin about 1.5–1.6 as long as the length of vein M from *dm-cu* to its bend. Legs black, fore claw longer than tarsomere 4+5, fore tibia with a row of *ad* s and *pd* s, and 1 *p* s; mid tibia with 2 *ad* s and a row of *pd* s, and 2 *p* s and 1 *v* s; hind tibia with a row of *ad* s and *pd* s, 3 *p* s. Abdomen syntergite 1+2 medially excavated to posterior margin, tergite 3 with a long trapezoidal black stripe, tergite 3 and 4 with a pair of median discal setae.

Female (Figs 1E–H). Frons 0.55–0.57 of head width; frontal vitta 0.35–0.40 as wide as fronto-orbital plate at middle, *i vt* s about 3/4 eye height, *o vt* s about 3/5 as long as *i vt* s; proclinate *orb* s, other characters same as male.

Remarks. This species (3+4 dc) is different from *Clemelis apicalis* (Villeneuve, 1923) (3+3 dc) and *C. gymnops* Herting, 1975 (3+4 dc) with middle sized crossed scutellar apical setae. And its 4th costal section of wing twice longer than 6th costal section, frons of male about 3/4 of eye width, narrower than that of *C. majuscula* Mesnil, 1954 (male frons more than eye width), *C. delicatula* Mesnil, 1970 (male frons 5/6 of eye width) and *C. gymnops* Herting, 1975 (male frons 0.9–0.95 of eye width).

### ***Clemelis xuei* Hou & Zhang sp. nov.** (Fig. 2)

Description. Body length 6.0–7.0 mm.

Male (Figs 2A–D). Head half spherical, brown in ground colour, covered with gray white or grayish yellow pruinescence. Eyes bare. Frontal vitta dark brownish black, fronto-orbital plate brown, covered with dense grayish yellow pruinescence. Parafacial and gena pale brown, covered with gray white pruinescence. Lunule black. Occiput black, covered with grayish yellow or gray white pruinescence. Antenna black; palpus black, rod-like, with black hairs; prementum gleaming black, labellum brown. Frons about 0.30–0.32 as wide as head, frontal vitta as wide as fronto-orbital plate at middle, parafacial at its narrowest point about 1/2 as wide as first flagellomere in lateral view, gena about 3/10 as wide as eye height. Seven to eight pairs of *fr* s crossed, the lowest one descending to parafacial, about to the level of basal one-fourth of first flagellomere; *oc* s proclinate and outward, distance between *oc* s slightly shorter than distance between postocelli, about 0.6 as long as *i vt* s, a pair of *poc* s,

shorter than oc s, about 0.4 as long as oc s; i vt s  $2/3$  as long as eye height, o vt s about  $1/3$  as long as i vt s, ocellar triangle with black bristles; fronto-orbital plate with 2 rows of long black hairs; parafacial bare; 2 pairs of inner fr s, reclinate; facial ridge with 10 setae on lower  $3/4$ . Vibrissa strong, situated below lower margin of face, about  $3/5$  as long as facial ridge, with 1–2 sbvbs on lower half. Proboscis not convex, with a row of setae; occiput with a row of setae below poc s. First flagellomere about 4.5–5.0 times as long as wide, about 4.5–5.0 times as long as pedicel, pedicel with setae, the lowest one long and strong; arista black, as long as first flagellomere, thickened on basal  $3/5$ , pedicel prolong, about 2.0–2.5 times its diameter. Prementum about 1.4–1.5 times as long as wide, with black long hairs; palpus shorter than first flagellomere, with black long hairs, labella large, with golden yellow long hairs.

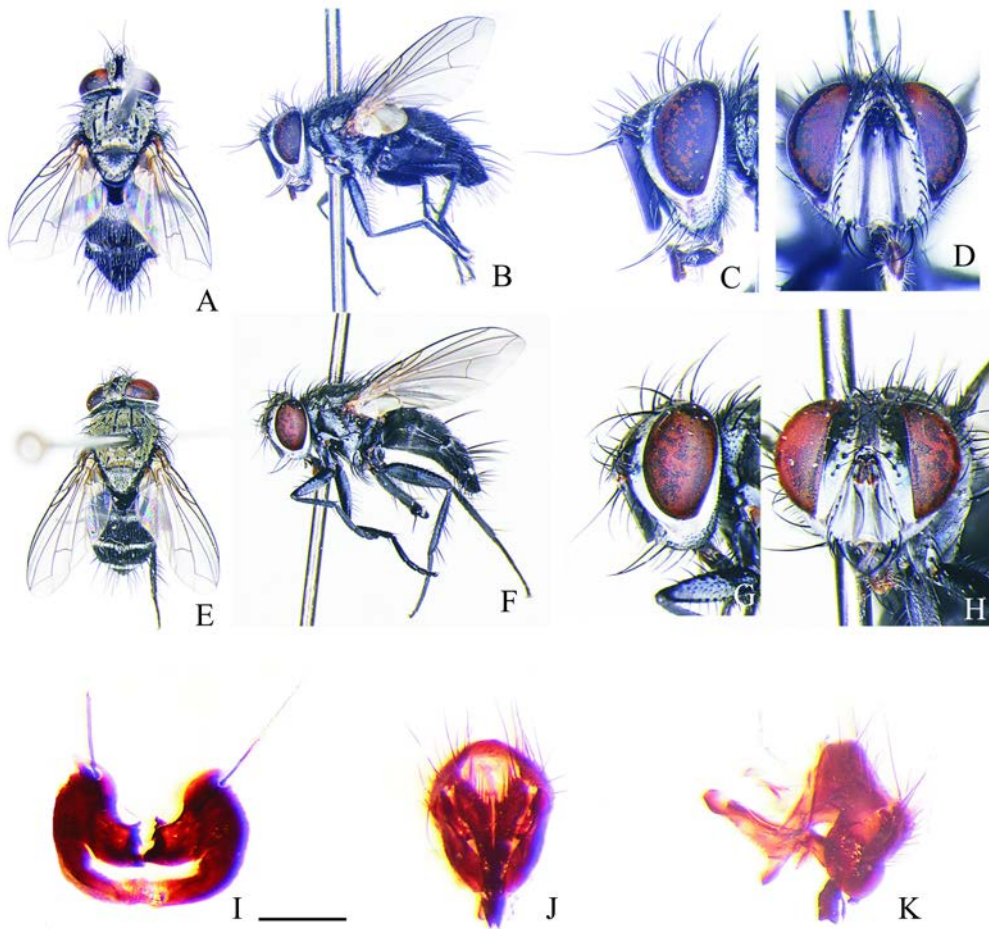


Figure 2. *Clemelis xuei* sp. nov. A–D. ♂; E–H. ♀. A, E. Bodies, dorsal views; B, F. Bodies, lateral views; C, G. Heads, lateral views; D, H. Heads, anterior views; I. Sternite 5; J. Cerci, surstylus and epandrium, posterior view; K. Cerci, surstylus, epandrium, aedeagal apodeme, hypandrium, phallus, pregonite and postgonite, lateral view. Scale bar = 0.5 mm (I–K).

Thorax brown black, with reclinate black hairs, with thin greyish yellow pruinescence; presutural scutum with 4 narrow black longitudinal vittae, the distance between inner vittae about 1.2–1.3 times as wide as the distance between inner and outer vittae, thoracic inner vittae only extending to anterior half portion on postsutural scutum, outer vittae extending to anterior 2/3 portion on postsutural scutum; scutellum black, with thin greyish yellow pruinescence. Three ppnr s arranged in a straight line; 2 npl s; 3+3 acr s; 3+3 dc s; 1+3 ial s; 3 spal s, the first one (prealar seta) about 1.4–1.5 times as long as npl s; 3 kepst s; scutellum with erect or suberect reclinate black setae dorsally; with or without discal scutellar setae; a pair of apical scutellar setae suberect and crossed, as long as scutellum; a pair of subapical scutellar setae parallel and extending backwards, 2.3–2.4 times as long as scutellum; a pair of lateral scutellar setae, about 1.2–1.3 times as long as scutellum; a pair of basal scutellar setae, 1.6–1.8 times as long as scutellum; prosternum with black setae, proepisternum bare; katepimeron bare.

Wing pale hyaline; tegula and basicosta black; costal spine developed, slightly longer than r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2 : 7 : 4; vein R<sub>4+5</sub> with 3 setulae dorsally and 3 setulae ventrally; bend of vein M blunt-angled; cell r<sub>4+5</sub> open; the length of vein M between r-m and dm-cu about 1.6–1.7 times as long as the length of vein M from dm-cu to its bend; the length between vein M and wing posterior margin about 1.0–1.1 as long as the length of vein M from dm-cu to its bend. Lower calypters developed, yellow white; halter pale brownish yellow.

Legs black; pulvillus greyish brown; fore claw longer than tarsomere 4+5; fore tibia with a row of ad s and pd s, and 2 p s; mid tibia with a row of ad s and pd s, and 2 p s and 1 v s; hind tibia with a row of ad s and pd s, 3 p s.

Abdomen long ovate, black, with reclinate black setae; syntergite 1+2 black; tergite 3 black; tergite 4 black; tergite 5 black; tergite 3 anterior 1/2, anterior 1/2 of tergite 4 and anterior 1/2 of tergite 5 with thin silvery pruinescence; anterior 1/7–1/6 of each tergites without tiny black setulae; syntergite 1+2 medially excavated to posterior margin, with 2 median marginal setae, a pair of lateral marginal setae; tergite 3 with 2 median marginal setae, a pair of lateral marginal setae, tergite 3 without median discal seta; tergite 4 with a pair of lateral marginal setae and a row of marginal setae, tergite 4 without median discal seta; tergite 5 with a row of discal setae and a row of marginal setae.

Male terminalia (Figs 2I–K). Sternite 5 (Fig. 2I) with posterior lobes somewhat round, with one long bristle and many hairs on inner apical margin as shown in the figures. Surstylus narrow, apically narrowed and slightly bent ventrally, and distinctly longer than cerci (Fig. 2J). Cerci large, apical 1/5 of cerci narrowed (Fig. 2K). Phallus with epandrium, basiphallus and distiphallus. Epandrium, aedeagal apodeme, hypandrium, phallus, pregonite and postgonite as shown in Fig. 2K.

Female (Figs 2E–H). Frons 0.38–0.40 of head width; frontal vitta slightly narrower than fronto-orbital plate, about 0.8 as width; with two preclinate orbital setae; first flagellomere about 3.6–4.0 times as width, about 3.0–3.5 times as long as pedicel; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1 : 4 : 2. Other characters are same as male.

**Holotype.** ♂, **China**, Shanxi, Jincheng, Qinshui, Xiachuan County, 1,200–1,600 m, 12–16-VII-2012, Qiang WANG (SYNU). **Paratypes.** 1♂1♀, **China**, Shanxi, Jincheng, Qinshui,

Xiachuan County, 1,200–1,600 m, 1216-VII-2012, Hongye FAN. 1♂6♀, **China**, Shanxi, Jincheng, Qinshui, Zhuweigou, 1,500–1,600 m, 25-VII-2012, Hongye FAN. 2♀, **China**, Shanxi, Linfen, Yicheng, Dahe Protection Station, 1,300–1,400 m, 28-VII-2012, leg. Hongye FAN (SYNU).

**Etymology.** The specific epithet name is in dedication to Prof. Wanqi XUE for his taxonomic contribution to Diptera of China and in celebration of the 60th anniversary of his research on insect taxonomy.

**Diagnosis.** Eye bare. Facial ridge with 10 setae on lower 3/4, occiput with a row seta below postoculus. Pedicel prolonged, about 2.0–2.5 times as its diameter. Three postpronotals arranged in a straight line, 3+3 discals. Tegula and basicosta black; costal spine developed, slightly longer than r-m. Legs black, mid tibia with a row of adspirals and pedicels, and 2 postspirals and 1 ventral seta.

**Remarks.** This species is similar to *Clemelis pullata*, but different by frons being more narrow than head width in both sexes, costal spine developed, slightly longer than r-m, fore tibia with 2 posterior setae, mid tibia with a row of adspirals, sternite 5 rounder, tergite 3 and 4 without median discal seta. The new species is also close to *C. apicalis* (Villeneuve, 1923) with 3+3 discals, but it differs from the latter in having a pair of suberected crossed apical scutellar setae, no median discal setae on tergite 4.

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