

ORIGINAL ARTICLE

# Three new species of *Tenthredo* Linnaeus, 1758 (Hymenoptera: Tenthredinidae) from Jiangxi and Zhejiang Provinces, China

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**Abstract** Three new species of *Tenthredo* Linnaeus, 1758 from Jiangxi and Zhejiang Provinces, China are described, namely, *T. carinacestanella* **sp. nov.**, *T. pseudoxanthopleurita* **sp. nov.** and *T. yudai* **sp. nov.**, belonging to *T. cestanella* group, *T. issiki* group, and *T. mongolica* group, respectively.

**Key words** Symphyta, Tenthredinoidea, *Tenthredo*, taxonomy, sawflies.

## 1 Introduction

*Tenthredo* Linnaeus, 1758 is the largest genus of the Symphyta in the order Hymenoptera. More than 1000 extant species have been described so far, of which 321 species were recorded in China (Xiao *et al.*, 2020). In this work, three new *Tenthredo* species collected from Jiangxi and Zhejiang Provinces, China are described and illustrated.

## 2 Materials and methods

All specimens of the newly described species were obtained by sweeping in wooded bog and forest fringe zones in Jiangxi and Zhejiang Provinces from 2014 to present. Totally 324 specimens of the three new species were examined and studied. The specimens were examined with a Motic-SMZ-171 stereomicroscope. Photos were taken with a Nikon D700 digital camera and a Leica Z16APO. The genitalia were examined with a Motic BA410E microscope and photographed with a Motic Moticam Pro 285A. Images were focus-stacked using Helicon Focus® (HeliconSoft, Kharkiv, Ukraine) and further processed with Adobe Photoshop CS 11.0®.

The terminology of genitalia follows Ross (1945) and the general morphology follows Viitasaari (2002), while few terms (*e.g.* middle fovea and lateral fovea) follow Takeuchi (1952).

The holotypes and part paratypes are deposited in the Asian Sawfly Collection, Nanchang, China (ASC). Other paratypes are deposited in the Scientific Research and Management Center of East China Pharmaceutical Botanical Garden, Lishui, Zhejiang, China (formerly LSAF).

Abbreviations used in the paper are as follow:

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OOCL—the shortest distance between a lateral ocellus and the occipital carina, or the hind margin of the head where this carina would be if it were developed (Benson, 1954);

OOL—the shortest distance between an eye and a lateral ocellus;

POL—the shortest distance between the mesal margins of the two lateral ocelli.

### 3 Taxonomy

#### *Tenthredo carinacestanella* sp. nov. (Figure 1A–P)

**Diagnosis.** This new species belongs to *Tenthredo cestanella* group. It is quite similar to *T. nigrofrontalinia* Wei, 1998 (Wei & Nie, 1998) but differs from the latter by the following: the anterior parts of the supraantennal tubercles distinctly elevated, median fovea deep; in dorsal view the female head behind eyes dilated in anterior half; the black macula on dorsum of head large and almost touching eyes; the mesepisternum with a short but distinct middle oblique carina; the female serrulae flat; harpes of male longer than broad and the valviceps of penis valve narrow and curved. In *T. nigrofrontalinia* Wei, the anterior of the supraantennal tubercles very low and faintly elevated, median fovea shallow; in dorsal view the female head behind eyes not dilated in anterior half; the black macula on dorsum of head remote from eyes; the mesepisternum with a small middle peak but without oblique carina; the female serrulae quite oblique; harpes of male broader than long and the penis valve with a long apical filament.

**Description.** Female. Holotype. Body length 14.0 mm; body mostly yellowish brown, head and thorax with faint greenish tinge, dorsum of abdominal tergites 2–8 brown; dorsum of head with a large black macula covering frons, ocelli, most of upper inner orbit, inner triangle of temple and postocellar furrow; antenna black with scape yellow; anterior lobes of mesonotum with a long and broad stripe, lateral lobes of mesonotum with a long triangular macula, a large and a small macula on dorsum of lateral lobe, bottom of parapsis, narrow posterior margin of metapostnotum, anterior margin and a small lateral spot of abdominal tergum 1, narrow basal stripe on tergum 2 black (Fig. 1A). Legs yellowish brown. Wings hyaline, forewing with veins C, Sc, base of M+Cu, base of vein 1A, pterostigma, hindwing with veins C, base of M+Cu, bases of 1A and 2A yellowish brown, other veins mostly blackish brown. Body hairs pale yellowish brown, but hairs on dorsum of head and thorax, and flagellomeres black (Fig. 1A).

Head and thorax slightly shiny, without clear puncture (Fig. 1C); labrum and clypeus shiny, without puncture or microsculpture (Fig. 1D); dorsum of head and thorax, and mesopleuron with very weak microsculptures; mesonotum, mesopleuron and abdominal terga with oil lustre; malar space with clear microsculptures; abdominal terga slightly shiny, with weak microsculptures.

Clypeus large and flat, anterior margin shallowly incised to 1/8 length of clypeus (Fig. 1D); malar space 1.5× as broad as diameter of median ocellus; supraantennal tubercles clearly elevated and confluent with frontal ridges; inner margin of eyes distinctly convergent downwards, shortest distance between them 1.1× as broad as longest axis of eyes (10:9.7); median fovea broad and deep, bottom flat, lateral foveae shallow; interocellar and postocellar furrows clear, POL:OOL:OOCL = 1.6:7:5; postocellar area weakly elevated, 1.3× as broad as long (6.5:5), lateral furrows deep, faintly curved; in dorsal view head behind eyes roundly curved, dilated at anterior half, posterior half distinctly narrowed (Fig. 1C). Antenna 1.1× length of head and thorax together (9:8.4), 0.8× length of abdomen (9:11), antennomere 3 1.3× length of antennomere 4 (9.6:7.2), ratio of antennomeres 5–9 as 5.5:4.5:3.5:3:2.5 (Fig. 1E). Mesoscutellum strongly elevated, with an acute apex (Fig. 1F), mesoscutellar appendage smooth, with weak middle carina; median of mesepisternum strongly elevated with a short but distinct oblique carina, ventral thorn distinct (Fig. 1G); distance between cenchri 2× breadth of a cenchrus. Hind tibia 0.9× length of hind tarsus (35:38), inner spur of hind tibia 0.5× length of metabasitarsus (18:35); metabasitarsus slender, 0.7× length of following 4 tarsomeres together (15:23); claw with inner tooth broader and longer than outer tooth. Ovipositor sheath slightly longer than metabasitarsus, valvula 3 clearly longer than valvifer 2 (11.8:8); dorsal apical corner of valvula 3 distinct in lateral view (Fig. 1H), lateral setae short and straight in dorsal view (Fig. 1I). Forewing with vein cu-a joining cell 1M at basal 1/4, vein 2r joining cell 2Rs at apical 2/5, cell 2Rs slightly length of cell 1R<sub>1</sub> and cell 1Rs together; hindwing with anal cell sessile (Fig. 1A). Lancet narrow with 21 serrulae (Fig. 1J), serrulae almost flat, middle serrulae each with 1–2 proximal and 16–18 distal minute teeth, 5th–8th serrulae from base as Fig. 1K.

**Male.** Body length 12.0 mm (Fig. 1B); posterior of middle and hind femora with broad black stripe; postocellar area 1.7× as broad as long (6:3.6), dorsal view of head distinctly narrowed behind eyes (Fig. 1L); lateral view of antenna as shown in Fig. 1M; apical margin of subgenital plate subtruncate (Fig. 1N); penis valve long and narrow, valviceps narrow and strongly curved (Fig. 1O); gonoforceps as Fig. 1P, harpe longer than broad, apical margin round.

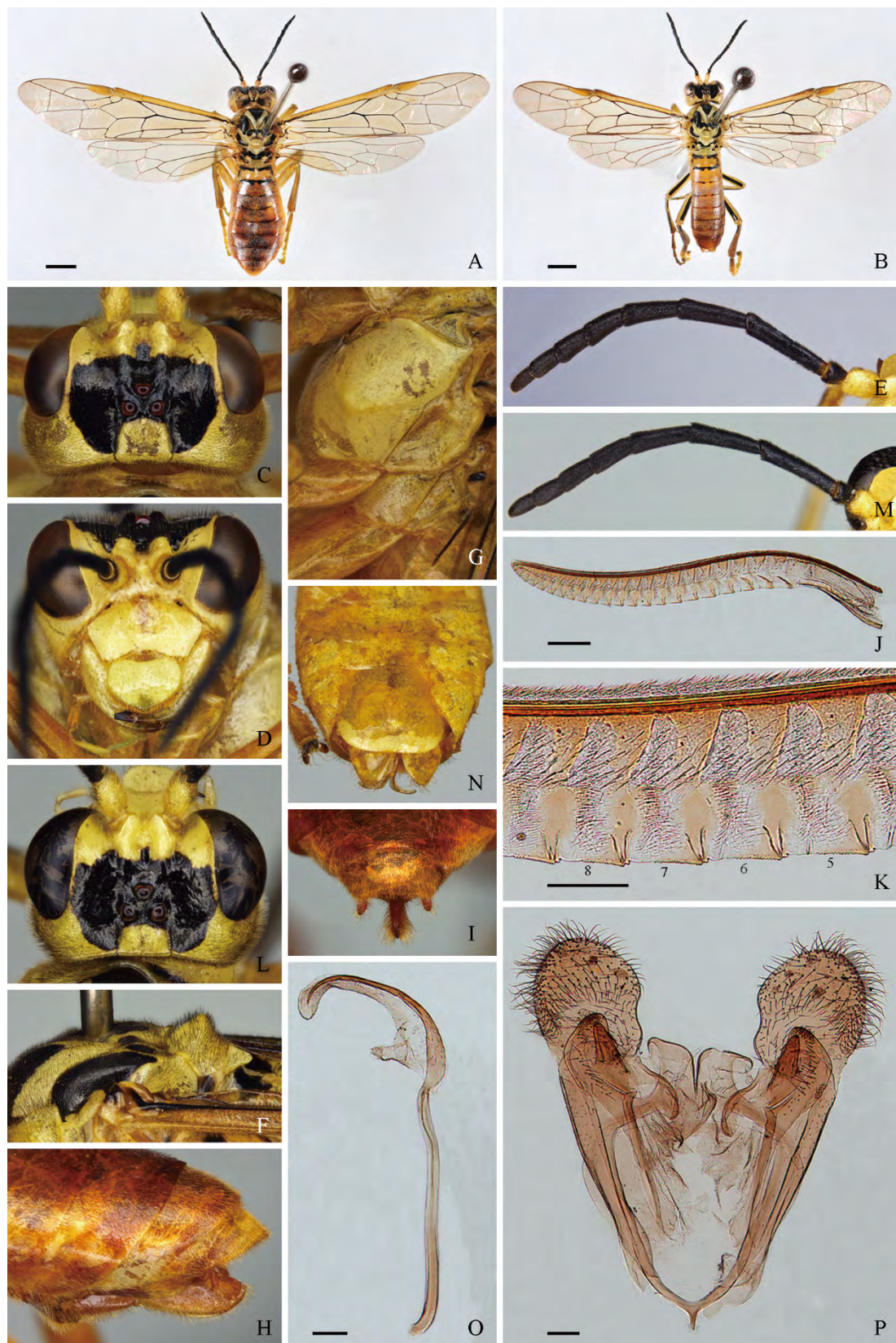


Figure 1. *Tenthredo carinacestanella* sp. nov. A. Female, dorsal view; B. Male, dorsal view; C. Head of female, dorsal view; D. Head of female, anterior view; E. Antenna of female, lateral view; F. Mesoscutellum of female, lateral view; G. Mesopleuron and metapleuron of female; H. Ovipositor sheath, lateral view; I. Ovipositor sheath, dorsal view; J. Lancet; K. The 5th–8th serrulae; L. Head of male, dorsal view; M. Antenna of male, lateral view; N. Subgenital plate of male, ventral side; O. Penis valve; P. Gonoforceps. A, C–K. Holotype; B, L–P. Paratype. Scale bars: A–B=2.0 mm; J, O–P=200  $\mu$ m; K=100  $\mu$ m.

Material examined. Holotype. ♀, LSAF17034, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 14 April 2017, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji. Paratypes. 13♀23♂, LSAF17034, same data as holotype; 5♀14♂, LSAF14007, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.34°N, 119.43°E, elev. 1140 m), 9–10 April 2014, leg. Zejian Li; 8♀12♂, LSAF15022, LSAF15024, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 5–11 April 2015, leg. Zejian Li; 6♀, LSAF16143, LSAF16153, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 14 April–4 May 2016, leg. Zejian Li, Mengmeng Liu & Zhiwei Chen; 51♀57♂, LSAF17036, LSAF17040, LSAF17049, LSAF17053, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 15–29 April 2017, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji; 1♀1♂, LSAF18009, LSAF18014, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 31 March–6 April 2018, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji; 2♀, LSAF19009, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.443°E, elev. 1106 m), 6–7 April 2019, leg. Zejian Li & Xiufang Li; 3♀, LSAF16144, LSAF16146, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 15–17 April 2016, leg. Zejian Li, Mengmeng Liu & Zhiwei Chen; 2♀4♂, LSAF17024, LSAF17035, LSAF17038, LSAF17050, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 6–25 April 2017, leg. Zejian Li, Mengmeng Liu & Tingting Ji; 5♀36♂, LSAF18005–LSAF18006, LSAF18011–LSAF18013, LSAF18018, LSAF18031, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 29 March–20 April 2018, leg. Zejian Li, Mengmeng Liu, Kaiwen Gao & Tingting Ji; 1♀, LSAF19021, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.443°E, elev. 362 m), 4 May 2019, leg. Zejian Li, Xiufang Li & Tingting Ji; 1♂, LSAF16156, China, Zhejiang, Lin'an District, Mt. Tianmu, Xianrending (30.349°N, 119.424°E, elev. 1506 m), 29 May 2016, leg. Zejian Li & Mengmeng Liu; 14♀, LSAF17054, China, Zhejiang, Lin'an District, Mt. Tianmu, Xianrending (30.349°N, 119.424°E, elev. 1506 m), 28–29 April 2017, leg. Zejian Li, Mengmeng Liu, Kaiwen Gao & Tingting Ji; 3♂, LSAF18036, LSAF18046, LSAF18048, China, Zhejiang, Lin'an District, Mt. Tianmu, Xianrending (30.349°N, 119.424°E, elev. 1506 m), 11 May–1 June 2018, leg. Zejian Li, Mengmeng Liu & Tingting Ji; 3♂, LSAF19023, China, Zhejiang, Lin'an District, Mt. Tianmu, Xianrending (30.350°N, 119.424°E, elev. 1506 m), 3 May 2019, leg. Zejian Li.

Variety. Female body length 13.5–14.5 mm; male body length 11.0–12.0 mm.

Etymology. The specific epithet, a noun, is composed of “*carina*” referring to the oblique carina on the mesepisternum and “*cestanella*”, a similar species of *Tenthredo*.

Distribution. China (Zhejiang).

### *Tenthredo pseudoxanthopleurita* sp. nov. (Figure 2A–O)

Diagnosis. This new species belongs to *Tenthredo issiki* group. The new species is similar to *T. xanthopleurita* Wei, 1998 (Nie & Wei, 1998), but differs from the latter by having the supraclypeal tubercles very low and evenly confluent with reddish frontal ridges, the anterior lobe of pronotum black except the narrow margin, claw with the inner tooth equal to the apical tooth and the postocellar area 1.3× as broad as long. In *T. xanthopleurita*, the supraclypeal tubercles are strongly elevated with the posterior end suddenly cut-off, not confluent with frontal ridges, the frontal ridge is black and the anterior lobe of pronotum is entirely yellowish white, claw with the inner tooth clearly longer than the apical tooth and the postocellar area is 1.5× as broad as long.

Description. Female. Holotype. Body length 12.0 mm. Body yellowish brown with yellowish white and black spots, abdomen reddish brown; following parts black: apex of mandibles, medially constricted spot on ocellar area, anterior margin of postocellar area and lateral furrow (Fig. 2C), propleuron mostly, anterior lobe of pronotum, narrow anterior stripe and broad ventral band of mesepisternum, anterior margin and lower posterior margin of mesepimeron, metepisternum mostly and metepimeron (Fig. 2F), anterior mesoscutal lobe except posterior triangular macula, lateral mesoscutal lobe except a small inner triangular macula, mesopostnotum, metascutum and metapostnotum. Wing hyaline, faintly yellowish toward base, forewing with veins C, Sc, base of M+Cu, basal half of 1A and 3A, pterostigma, hindwing with veins C and R1 yellowish brown; other veins dark brown to blackish brown (Fig. 2A).

Labrum and clypeus shiny, without microsculpture, apex of labrum with some shallow and large punctures, clypeus without puncture (Fig. 2D); dorsum of head slightly shiny, with fine and weak punctures (Fig. 2C); thorax shiny, with oil luster, mesonotum with minute punctures, slightly dense, without clear microsculpture; mesepisternum with minute punctures, not dense, interspaces between punctures with weak microsculpture; all abdominal terga slightly shiny, surface with very weak punctures and microsculptures.

Clypeus large and flat, clearly broader than shortest distance between eyes, anterior margin incised to 1/4 length of clypeus, lateral lobes broad and short, apical margin obtuse, bottom almost straight (Fig. 2D); malar space 1.5× as broad as



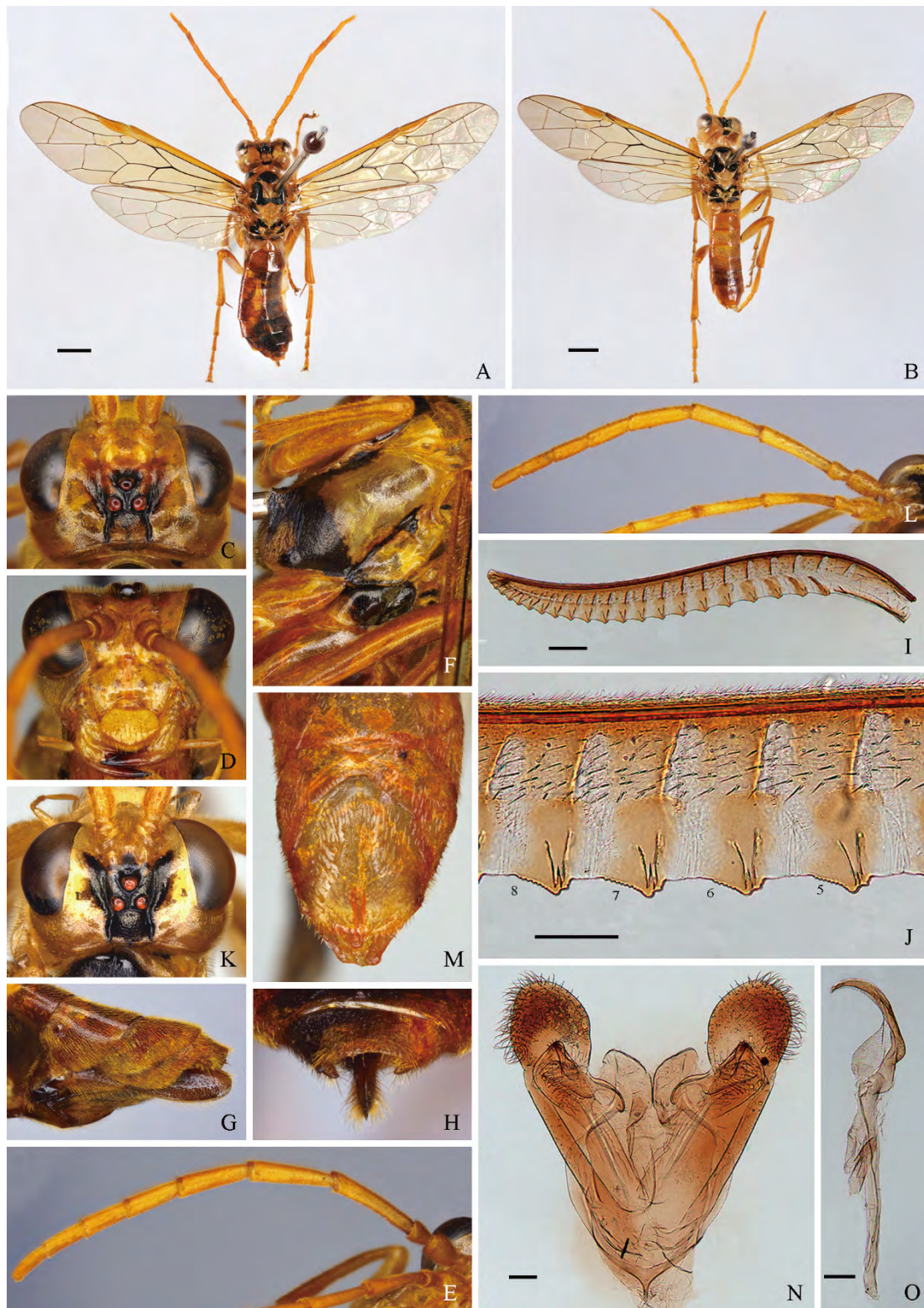


Figure 2. *Tenthredo pseudoxanthopleurita* sp. nov. A. Female, dorsal view; B. Male, dorsal view; C. Head of female, dorsal view; D. Head of female, anterior view; E. Antenna of female, lateral view; F. Mesopleuron and metapleuron of female; G. Ovipositor sheath, lateral view; H. Ovipositor sheath, dorsal view; I. Lancet; J. The 5th–8th serrulae; K. Head of male, dorsal view; L. Antenna of male, lateral view; M. Subgenital plate of male, ventral side; N. Gonoforceps; O. Penis valve. A, C–J. Holotype; B, K–O. Paratype. Scale bars: A–B=2.0 mm; I, N–O=200  $\mu$ m; J=100  $\mu$ m.

diameter of median ocellus; supraantennal tubercles weakly elevated and confluent with frontal ridges; median fovea broad, bottom flat; lateral foveae small; interocellar furrows clear, postocellar furrows weak; POL : OOL : OOCL = 1.7 : 7 : 4.5; postocellar area weakly elevated, 1.3× as broad as than long (6 : 4.5), lateral furrows deep and curved, divergent; head behind eyes roundly curved, weakly dilated at first, then distinctly narrowed (Fig. 2C). Antenna 1.7× as long as head and thorax together (10 : 6), 1.3× as long as abdomen (10 : 7.5), antennomere 3 1.1× as long as antennomere 4 (6.8 : 6.3), ratio of antennomeres 5–9 as 5.5 : 4.2 : 3.5 : 3.1 : 3 (Fig. 2E). Mesoscutellum strongly elevated with an acute apex; posttergite with a low middle carina; mesopleuron elevated with an acute middle peak, ventral thorn absent (Fig. 2F); distance between cenchri 1.5× breadth of a cenchrus. Hind inner tibial spur 0.5× length of metabasitarsus (25 : 52); metabasitarsus slender, 0.7× length of following 4 tarsomeres together (52 : 75); claw with inner tooth as long as outer tooth. Ovipositor sheath slightly longer than metabasitarsus, valvula 3 longer than valvifer 2 (14 : 11), apical margin roundish in lateral view (Fig. 2G), narrow and tapering toward apex in dorsal view (Fig. 2H). Forewing with vein cu-a joining cell 1M at basal 1/3, vein 2r joining cell 2Rs at apical 1/3, cell 2Rs longer than cell 1Rs (4.5 : 2.7); hindwing with anal cell sessile (Fig. 2A). Lancet slender and with 21 serrulae (Fig. 2I), serrulae distinctly protruding and oblique, middle serrulae each with 1–2 proximal and 6–8 distal small teeth, annular spine bands narrow, spines sparse; 5<sup>th</sup>–8<sup>th</sup> serrulae from base as Fig. 2J.

Male. Body length 12.0 mm (Fig. 2B); color similar to female; antenna as shown in Fig. 2L; a subgenital plate longer than broad, apex roundish (Fig. 2M); gonoforceps (Fig. 2N), harpe slightly longer than broad, apical margin round; valvices of penis valve narrow and long, distinctly curved (Fig. 2O).

Material examined. Holotype. ♀, LSAF17076, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 19 May 2017, leg. Tingting Ji. Paratypes. 1♀, LSAF17076, same data to holotype; 2♀, LSAF16149–LSAF16150, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.442°E, elev. 405 m), 5–6 May 2016, leg. Zejian Li & Zhiwei Chen; 4♀1♂, LSAF17067, LSAF17080, LSAF17089, China, Zhejiang, Lin'an District, Mt. Tianmu, Kaishanlaodian (30.343°N, 119.433°E, elev. 1106 m), 14 May–7 June 2017, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji; 1♀, LSAF18028, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.442°E, elev. 405 m), 17–18 April 2018, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji; 2♂, LSAF16146, LSAF16148, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.442°E, elev. 405 m), 17 April–4 May 2016, leg. Zejian Li, Mengmeng Liu & Zhiwei Chen; 2♂, LSAF16174, China, Jiangxi, Mt. Wugong, Hongyan'gu (elev. 580 m), 3 April 2016, leg. Maoling Sheng & Tao Li; 1♂, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.442°E, elev. 405 m), 7 May 2017, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji.

Variety. Female body length 12.0–13.0 mm; male body length 12.0–12.5 mm.

Etymology. The specific epithet "*pseudoxanthopleurita*" is a noun and composed of "*pseudo-*" (similar) and "*xanthopleurita*" (a species of *Tenthredo*), as the new species is very similar to *Tenthredo xanthopleurita* in body color.

Distribution. China (Jiangxi, Zhejiang).

### *Tenthredo yudai* sp. nov. (Figure 3A–I)

Diagnosis. This new species belongs to *Tenthredo mongolica* group. The new species is very similar to *T. rubitarsalitia* Wei & Xu, 2012 (Yan *et al.*, 2012), but differs from the latter by having the abdominal terga without purplish tinge, the apical 2/5 and lateral sides of abdominal tergum 1 bright yellow, the 3rd tergum entirely black or with a narrow reddish apical margin, antenna entirely and a large rectangular macula on mesoscutellum orange brown, hind femora reddish with black stripe on posterior side, postocellar area 1.5× as broad as long, the mesoscutal median groove distinct, mesoscutellum roundly elevated and without middle carina or peak, appendage with a broad and obtuse middle carina, the lateral side of mesepisternum reticulate with distinct punctures, the middle serrulae of lancet weakly oblique, with 2–3 proximal and 8–9 distal teeth. While the *T. rubitarsalitia* has the abdomen with distinct purplish tinge, the tergum 1 entirely black, the tergum 3 largely and the lateral sides of tergum 4 yellowish white; antenna mostly black with reddish base; mesoscutellum and hind femur entirely black, postocellar area 2× as broad as long; mesoscutal median groove absent, mesoscutellum strongly elevated with a distinct middle carina and peak, appendage with a narrow middle carina, the lateral side of mesopleuron densely microsculptured without large puncture, the middle serrulae of lancet strongly oblique, with 2 proximal and 6–7 distal teeth.

Description. Female. Holotype. Body length 11.0 mm. Body black; labrum except for anterior margin, clypeus entirely, apical 2/5 and lateral side of abdominal tergum 1 bright yellow; posterior margin of pronotum and a large rectangular macula on mesoscutellum orange brown; palp largely, mandible except black apex, malar space, a triangular macula on supraclypeal area, anterior margin of supraantennal tubercles, antenna, tegula, apical margins of abdominal terga 4–7 (gradually broader from terga 4 to 7), abdominal tergum 8 almost entirely, abdominal tergum 10, apical stripes of sternum 6, sternum 7 largely and ovipositor sheath reddish brown. Legs reddish brown, coxa except ventral apex and a broad posterior stripe on each

femur black. Wings subhyaline, apex slightly infusate, forewing with veins C, Sc, pterostigma, anterior side of Sc+R, basal part of M+Cu, 1A and 3A, hindwing with vein C pale brown, other veins dark brown to blackish brown. Body hairs silver, setae on ovipositor sheath long and slightly curved, blackish brown (Fig. 3A).

Labrum and clypeus shiny, surface of clypeus with sparse, shallow and large punctures, without microsculpture (Fig. 3C); dorsum of head with extreme dense and coarse punctures, interspaces linear and shiny, without microsculpture (Fig. 3B); mesonotum densely punctured with central area of each lobe densely microsculptured, matt; mesoscutellum and appendage except middle carina densely punctured, slightly shiny, middle carina of appendage shiny; anterior slope of metascutellum with large and shallow punctures, otherwise almost smooth, shiny; lateral side of mesopleuron reticulate, almost matt, ventral side densely microsculptured, matt; mesepimeron and metepisternum with small and dense punctures; metepimeron largely shiny, posterior margin with some punctures (Fig. 3E). Abdominal tergum feebly microsculptured; other abdominal terga densely microsculptured, without distinct puncture.

Clypeus large and flat, broader than shortest distance between eyes, anterior margin triangularly incised to 1/3 length of clypeus; labrum large, apical margin weakly protruding (Fig. 3C); malar space 1.2× as broad as diameter of middle ocellus; inner margin of eyes distinctly convergent downwards, shortest distance between eyes 1.1× as broad as longest axis of eyes (8.7:7.8); upper margin of toruli elevated; supraantennal tubercles indistinct, almost flat and confluent with frons; median fovea shallow, bottom with a low but distinct middle ridge; lateral foveae deep; frons subsquare, slightly elevated, without frontal ridge; interocellar furrow distinct, postocellar furrow indistinct; POL:OOL:OOCL = 2.5:7:5; postocellar area weakly elevated, 1.5× as broad as long (7.5:5), marginal carina sharp; lateral furrows shallow and curved, divergent backwards; in dorsal view head weakly dilated behind eyes, 0.6× as broad as eye length (Fig. 3B). Antenna stout, 0.9× length of head and thorax together (12:14), 0.8× length of abdomen (12:15), antennomere 2 1.2× length of its apical breadth, antennomere 3 1.5× length of antennomere 4 (7.5:5), ratio of antennomeres 5–9 as 4.5:3.5:3:2.6:2.1 (Fig. 3D). Mesoscutal median groove clear, mesoscutellum roundly elevated, without middle carina or peak; appendage with a broad and obtuse middle carina; middle of mesopleuron elevated with an distinct oblique carina, ventral thorn absent (Fig. 3E); distance between cenchri 2× breadth of a cenchrus. Hind inner tibial spur 1.25× as broad as apical breadth of hind tibia (1:0.8), 1/3 length of metabasitarsus (1:3); metabasitarsus slender, 0.7× as long as following 4 tarsomeres together (3:4.5); plantar lobe 1 of hind tarsus narrow, 1.2× as broad as apical breadth of metabasitarsus, distance between plantar lobes 1 and 2 2× length of plantar lobe 2; claw without basal lobe, inner tooth much shorter than outer tooth. Ovipositor sheath as long as fore tibia, valvula 3 1.6× as long as valvifer 2, apical margin roundish in lateral view (Fig. 3F) and tapering toward apex in dorsal view (Fig. 3G). Forewing with vein R+M slightly shorter than vein 1M, cell 2Rs slightly shorter than cells 1R<sub>1</sub> and 1Rs together (5:6), vein 2r joining cell 2Rs at apical 2/5, vein cu-a joining cell M at basal 1/4, anal cell of hindwing sessile (Fig. 3A). Lancet narrow with 21 serrulae (Fig. 3H), serrulae low triangularly protruding and slightly oblique, middle serrulae each with 2–3 proximal and 8–9 distal small teeth, annular spine bands narrow, spines sparse; 5th–8th serrulae from base as Fig. 3J.

Male. Unknown.

Material examined. Holotype. ♀, LSAF17024, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 6 April 2017, leg. Zejian Li & Mengmeng Liu. Paratypes. 4♀, LSAF17024, same data to holotype; 9♀, LSAF17025–LSAF17026, LSAF17028–LSAF17029, LSAF17037–LSAF17038, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 6–17 April 2017, leg. Zejian Li, Mengmeng Liu, Kaiwen Gao & Tingting Ji; 9♀, LSAF16141, LSAF16144, LSAF16146, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.443°E, elev. 362 m), 13–17 April 2016, leg. Zejian Li, Mengmeng Liu & Zhiwei Chen; 2♀, LSAF14008, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.36°N, 119.44°E, elev. 400 m), 11 April 2014, leg. Zejian Li; 2♀, LSAF15026, LSAF15028, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 8–10 April 2015, leg. Zejian Li; 10♀, LSAF18005–LSAF18006, LSAF18012, LSAF18018–LSAF18019, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.323°N, 119.442°E, elev. 405 m), 29–30 March–7–8 April 2018, leg. Mengmeng Liu, Kaiwen Gao & Tingting Ji; 2♀, China, Zhejiang, Mt. Tianmu, (elev. 1100–1500 m), 5–6 May 2017, leg. Wenxuan Bi; 1♀, China, Zhejiang, Mt. Tianmu, (elev. 800–1100 m), 8 April 2018, leg. Wenxuan Bi; 1♀, China, Zhejiang, Mt. Tianmu, (elev. 330–450 m), 9–15 April 2018, leg. Wenxuan Bi; 5♀, LSAF19007–LSAF19008, China, Zhejiang, Lin'an District, Mt. Tianmu, Chanyuan Temple (30.322°N, 119.443°E, elev. 362 m), 5–8 April 2019, leg. Zejian Li & Xiufang Li.

Variety. Female body length 11.0–12.0 mm.

Etymology. The specific epithet “*yudai*”, a pronunciation of two Chinese characters, Yu-Dai, referring to the abdominal tergum 1 with a bright yellow band.

Distribution. China (Zhejiang).



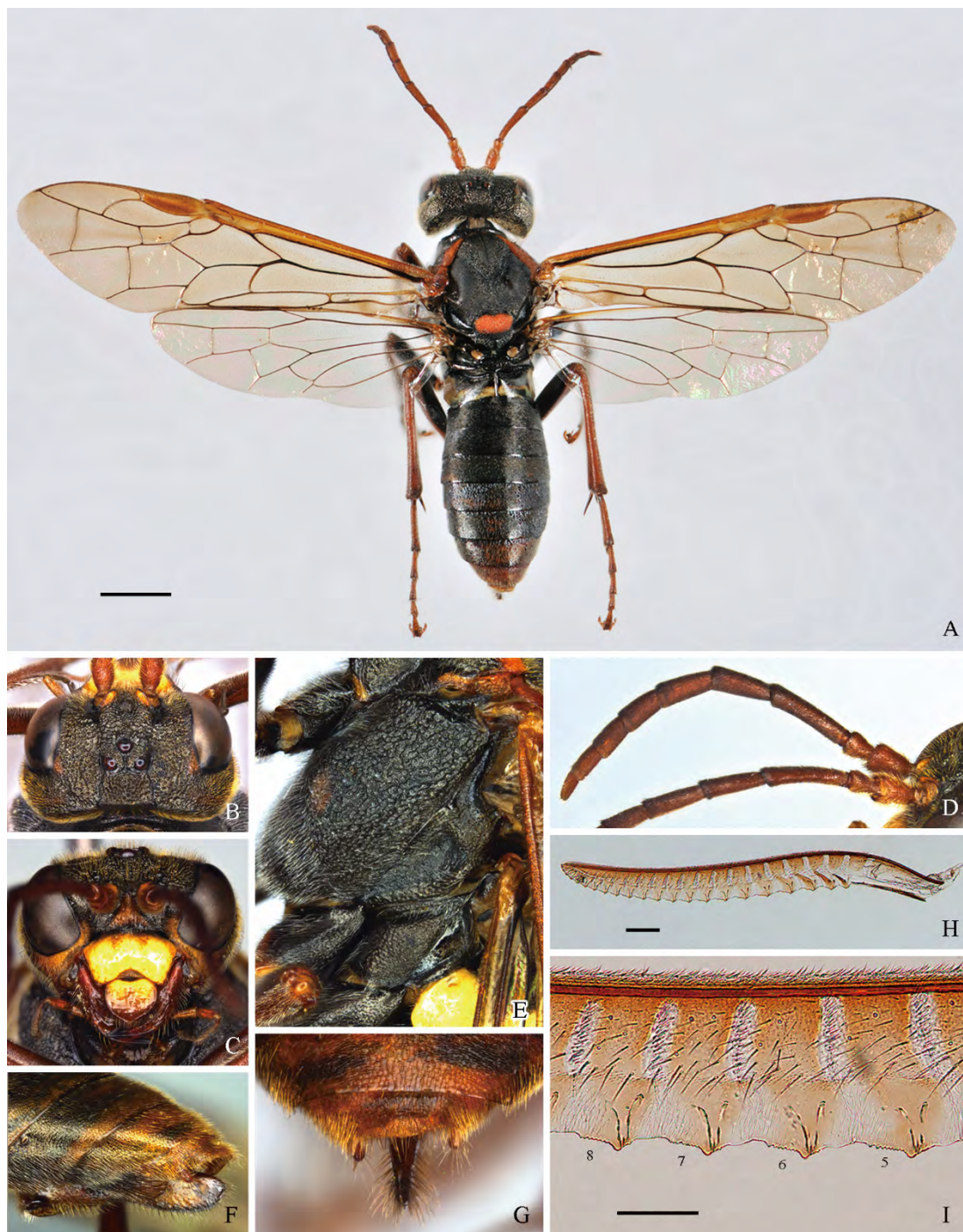


Figure 3. *Tenthredo yudai* **sp. nov.**, ♀, holotype. A. Female, dorsal view; B. Head of female, dorsal view; C. Head of female, anterior view; D. Antenna of female, lateral view; E. Mesopleuron and metapleuron of female; F. Ovipositor sheath, lateral view; G. Ovipositor sheath, dorsal view; H. Lancet; I. The 5th–8th serrulae. Scale bars: A=2.0 mm; H=200 µm; I=100 µm.

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