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ORIGINAL ARTICLE

Three new species of genus *Homoneura* from Qinling Mountains, China (Diptera: Lauxaniidae)

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Abstract Three species from Qinling Mountains are described as new to science: *Homoneura* (*Homoneura*) *gaotangensis* Gao & Shi **sp. nov.** from *bistriata*-group, *H.* (*H.*) *xunyangensis* Gao & Shi **sp. nov.** from *laticosta*-group, *H.* (*H.*) *dorsocuspidata* Gao & Shi **sp. nov.** from *singularis*-group. Keys to species of its species group are provided, respectively.

Key words *Homoneura* (*Homoneura*), Homoneurinae, Qinling Mountains, species group.

1 Introduction

The Qinling Mountains are a fold mountain range running across central China. The complex topography of the Qinling Mountains had experienced the geological transformation of Paleozoic, Triassic, Mesozoic and Himalayan movements, and finally formed the present geological pattern (Zhang, 1998). The Qinling Mountains is north to be temperate or frigid and mainly with evergreen broad-leaved forest, and south to be subtropical and tropical and mainly with deciduous broad-leaved tree (http://www.ce.cn/cysc/ztpd/2007/xhgsxzt/whzl/200708/20/t20070820_12610913.shtml). The forests preserved a large number of animals and plants, which is also present in the genus *Homoneura* (Lauxaniidae, Homoneurinae).

The subgenus *Homoneura* (*Homoneura*) Wulp, 1891 can be separated from other subgenera by the following characters: mesonotum with 0–1+3 dorsocentral setae, acrostichal setae in 4–12 rows, 0 supra-alar seta, 0 intra-alar seta; fore tibia not compressed in male; mid tibia with 2–3 apicoventral setae, 0 posterior seta; hind legs with tarsomere 2 not black; wing with small costal black spines extending to tip of R_{4+5}, occasionally before tip of R_{4+5}; M_1 not curved upward and close to R_{4+5} (Stuckenberg, 1971; Miller, 1977). There are 696 species all over the world, including 415 species from the Oriental Region, 108 species from the Palearctic Region, and 208 species from China (Shi & Yang, 2009a, b, 2014; Shi *et al.*, 2012; Gao *et al.*, 2016; Shen *et al.*, 2017, 2018; Shi *et al.*, 2017).

Here three species from Qinling Mountains are described as new to science, which belong to three respective species groups based on previous research (Shi & Yang, 2014). And keys to species of its species group are provided respectively.

2 Materials and methods

The general terminology follows Cumming & Wood (2009), Gaimari & Silva (2010) and Shi & Yang (2014). Genitalia preparations were made by removing and macerating the apical portion of the abdomen in cold saturated NaOH for an hour, then rinsing and neutralizing them with glacial acetic acid for dissection and study. After examination in glycerin, genitalia were transferred and stored in a microvial with glycerin pinned below each specimen. Specimens examined were deposited in the entomological collection of Inner Mongolia Agricultural University, Hohhot (IMAU).

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3 Taxonomy

bistriata-group

Diagnosis. The species group is different from other species groups by following: Body is yellow; palpus is yellow except for black tip; mesonotum generally has two brown median stripes (rarely absent). Wing has seven brown spots: apex of R_1, R_{4+5} and M_1, preapical spot of R_{2+3}, r-m and dm-cu, and a brown medial spot present between *crossvein r-m* and apical spot on R_{4+5}, brown preapical or apical spot on R_{2+3} confluent or isolated with medial spot on R_{4+5}. Male genitalia are different by: surstylus originated from ventroapical corner of epandrium; hypandrium H-shaped, hypandrial apodeme distinct; gonites shorter than phallus.

This group is similar to *singularis*-group, but the latter has two brown spots between r-m and apical spot on R_{4+5}. It is also similar to the *striatifrons*-group, but the latter has larger brown spots and a small brown spot is present on the crossed base of R_{2+3} and R_{4+5}. It is very similar to *tibetensis*-group, but the latter has brown apical spot on R_{2+3} very close to tip.

Key to the eight species of *bistriata*-group (modified from Shi & Yang, 2014).

1. Wing with brown apical spot at tip of Sc and R_1 and brown cloud spot on r-m entirely or slightly confluent 2
   Wing with brown apical spot at tip of Sc and R_1 and brown cloud spot on r-m separated distinctly 6
2. Wing with a brown wide transverse band extending from tip of subcostal cell and preapical section or tip of R_{2+3}, confluent with brown cloud on r-m and medial spot between r-m and apical spot on R_{4+5} 3
   Wing without brown wide transverse band as above 4
3. Wing with brown integrated transverse band (see Yang *et al.*, 2002: fig. 9); antenna long plumose; mesonotum with two dark brown stripes; abdominal tergites 3–6 each with blackish medial spots ..... ***H.* (*H.*) *hainanensis* Yang, Hu & Zhu**
   Wing with two small hyaline spots inserting in brown wide transverse band (see Yang *et al.*, 2001: fig. 14); antenna pubescent; mesonotum without brown stripes; abdominal tergites 4–6 each with narrow blackish medial stripes ..... ***H.* (*H.*) *extensa* Yang, Hu & Zhu**
4. Mesonotum without brown stripes; surstylus situated at tip of epandrium, long, curved and truncate apically (see Sasakawa & Ikeuchi, 1985: fig. 4) ..... ***H.* (*H.*) *mayrhoferi* Czerny**
   Mesonotum with two narrow brown stripes; surstylus situated at anterior ventral corner or at middle of epandrium, short claviform. 5
5. Palpus yellow, except for brown on apical 1/3–1/2; abdominal tergites 4–6 each with a brown medial spot; surstylus slightly curved, tips of two hypandrial apodemes close to each other (see Sasakawa & Ikeuchi, 1982: fig. 5) ..... ***H.* (*H.*) *bistriata* (Kertész)**
   Palpus yellow, except for black apically; abdominal tergites 5–6 each with a small black medial spot; surstylus curved downward apically, tips of two hypandrial apodemes parallel (see Yang *et al.*, 2002: figs 2–3) ..... ***H.* (*H.*) *conjunctiva* Shi, Wang & Yang**
6. Mesonotum with four brown stripes 7
   Mesonotum with two brown stripes; face without black spots or stripes; abdominal tergites 1–6 each with a small black spot; epandrium not contorted in lateral view; surstylus wide sheet-like (see Yang *et al.*, 2002: figs 4–6) ..... ***H.* (*H.*) *separata* Yang, Hu & Zhu**
7. Face with a pair of grayish black spots on upper half and basal sections of two spots confluent, and a pair of brown thin lateral stripes; abdominal tergites 3–6 each with brown stripe-like spots and a pair of transverse stripe-like lateral spots on posterior margin; male genitalia: surstylus as a short claviform process in lateral view (see Shi & Yang, 2014: fig. 200) ..... ***H.* (*H.*) *quadristriata* Shi & Yang**
   Face without black spots or stripes (Fig. 2); abdomen entirely yellow; male genitalia: surstylus as a long claviform process in lateral view (Fig. 7) ..... ***H.* (*H.*) *gaotangensis* Gao & Shi sp. nov.**

***Homoneura* (*Homoneura*) *gaotangensis* Gao & Shi sp. nov.** (Figs 1−11)

Type material. Holotype ♂ (IMAU), CHINA, Shaanxi, Hua County, Gaotangzhen, 859 m, 8.VII.2013, Lei Zhang. Paratype. ♂ (IMAU), same data as holotype.

Diagnosis. The new species is similar to *H.* (*H.*) *separata* Yang, Hu & Zhu, 2002, but the latter has the following features: wing without brown transverse stripe on base of M_1, lower margin of dm-cu without brown extended spot, and surstylus short and broad at apex.

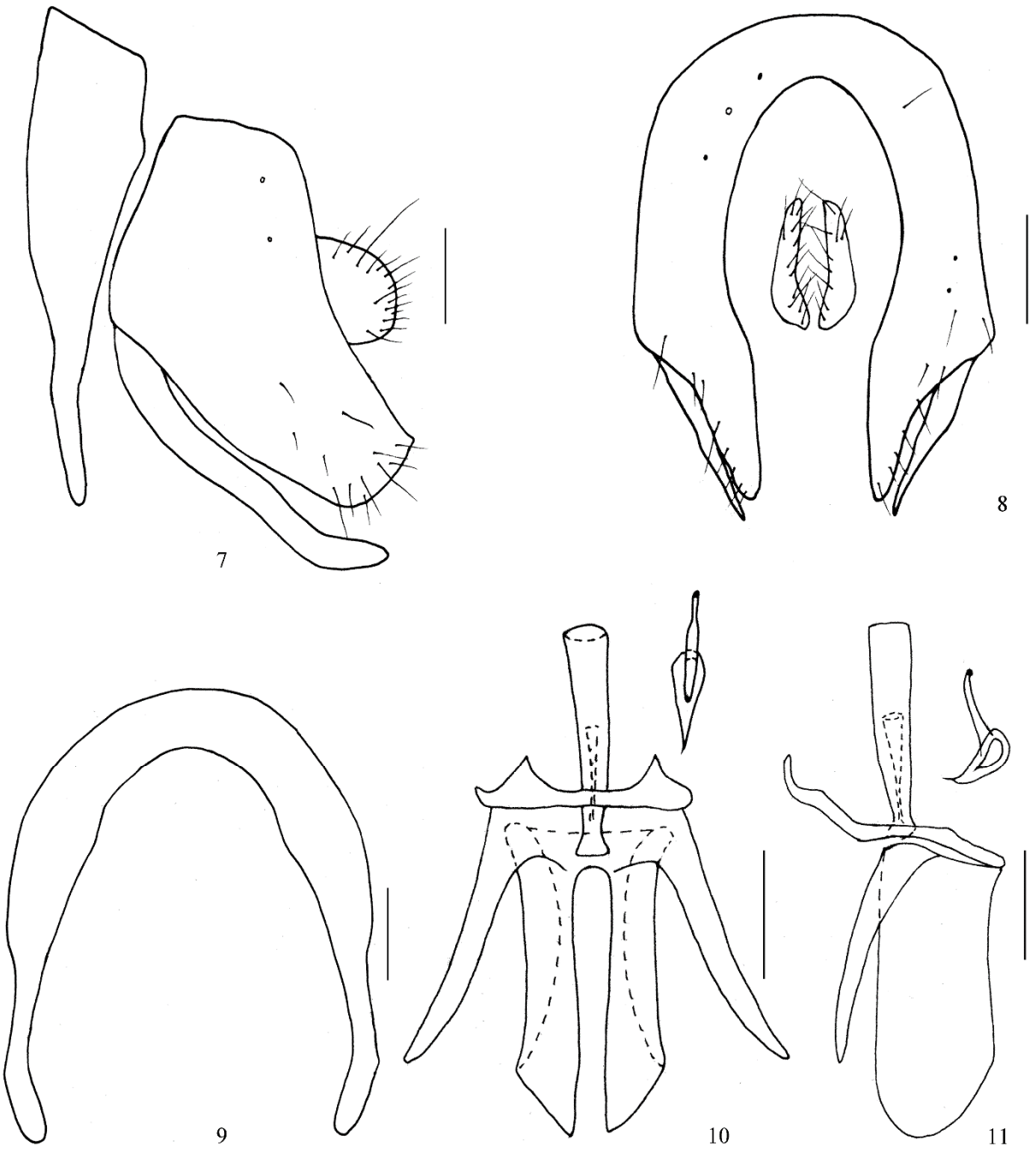
Description. Male. Body length 3.6−3.7 mm, wing length 3.6−3.7 mm.

Head (Figs 2−3) yellow. Frons about 1.5 times longer than wide. Inner vertical seta, anterior fronto-orbital seta and posterior fronto-orbital seta missing. Parafacial yellow with a row of short setulae on apical half of inner margin. Gena about 1/9 height of eye. Antenna yellow, 1st flagellomere 2.0 times longer than high; arista blackish brown, plumose, with

Figures 1–6. *Homoneura* (*Homoneura*) *gaotangensis* Gao & Shi **sp. nov.**, paratype, male. 1. Habitus, lateral view. 2–3. Head, anterior and lateral view. 4. Thorax, dorsal view. 5. Abdomen, lateral view. 6. Wing.

longest ray as long as height of 1st flagellomere. Proboscis yellow. Palpus yellow with brown apex.

Thorax (Figs 1, 4) yellow. Mesonotum with a pair of brown middle stripes and a pair of brown lateral stripes, brown middle stripes extending beyond the second dorsal seta and then becoming a pale brown rectangular spot; 0+3 dorsocentral setae (1st postsutural dorsocentral seta behind transverse suture), acrostichal setae in 6 rows. Scutellum with brown median broad stripe. Legs mostly yellow, all tarsomeres 3–5 brown. Fore femur with 3 posterior dorsal setae, 2 posterior ventral setae and ctenidium with 9 short setae; fore tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Mid femur with 6 anterior setae and 1 short apical posterior seta; mid tibia with 1 strong preapical anterior dorsal seta and 1 strong apicoventral seta. Hind femur with 1 preapical anterior dorsal seta and 1 anterior ventral seta; hind tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Wing (Fig. 6) hyaline with several brown spots: one round spot



Figures 7–11. *Homoneura* (*Homoneura*) *gaotangensis* Gao & Shi **sp. nov.**, paratype, male genitalia. 7. Syntergosternite and epandrial complex, lateral view. 8. Epandrial complex, posterior view. 9. Syntergosternite, anterior view. 10. Phallus complex, ventral view. 11. Phallus complex, lateral view. Scale bar = 0.1 mm.

present between r-m and subapical spot on R_{4+5} slightly fused with subapical spot on R_{2+3}, both subapical spots on R_{2+3} and R_{4+5} extending upward to wing margin; preapical spot on M_1 separated from subapical spot on R_{4+5}; crossvein r-m and dm-cu surrounded by a cloudy spot; a transverse stripe on base of M_1 and brown base of CuA_1; subcostal cell pale brown; costa with 2nd (between R_1 and R_{2+3}), 3rd (between R_{2+3} and R_{4+5}) and 4th (between R_{4+5} and M_1) sections in proportion of 3.9:1.9:1; crossvein r-m at middle of discal cell; ultimate and penultimate sections of M_1 in proportion of 1:1.9; ultimate sections of CuA_1 about 1/11. Halter pale yellow.

Abdomen (Figs 1, 5) yellow. Male genitalia (Figs 7−11): syntergosternite 7+8 semicircular with long arms; epandrium broad, surstylus originated from anterior ventral corner, longer in lateral view and sharp at apex in posterior view; hypandrium narrow and stripe-like, hypandrial apodeme small; postgonite slender and sharp at apex; phallus broad columniform in lateral view; phallapodeme shorter than phallus.

Female. Unknown.

Distribution. China (Shaanxi).

Etymology. The new species is named after collecting locality Gaotang.

laticosta-group

Diagnosis. The species group is different from other species groups by following: wing with narrow brown or broad deep brown area which extends from costal margin to R_{4+5} or M_1 or CuA_1, and a brown stripe-like spot is present on crossvein r-m and/or dm-cu or absent. Male genitalia are different by: surstylus with 1–3 processes; hypandrium H or U-shaped or narrow transverse bar-like.

Key to the nine species in *laticosta*-group (modified from Shen *et al.*, 2018).

1. Wing sapromyziform, with small costal black spines extending slightly before apex of R_{4+5}; male genitalia: surstylus long and hooked with a sharp apex (see Shewell, 1971: plate II, fig. 9) ..... ***H.* (*H.*) *kaszabi* Shewell**
   Wing homoneuriform, with small costal black spines extending to apex of R_{4+5}; male genitalia not as above 2
2. Wing with broad deep brown area extending from costal margin to M_1 and a dark stripe on CuA_1(see Kertész, 1915: fig. 9); mesonotum with a broad grayish brown medial stripe and a pair of postsutural lateral spots and short lateral stripes ..... ***H.* (*H.*) *discoidalis* (Kertész)**
   Wing with brown area extending from costal margin to tip of R_{4+5} or M_1, but no dark stripes on CuA_1; mesonotum without pattern as above 3
3. Mesonotum with a blackish gray area between postpronotum on anterior margin, a pair of blackish gray postsutural lateral stripes extending to postsutural third dorsocentral seta; acrostichal setae in 4 rows; katepisternum blackish gray on lower part ..... ***H.* (*H.*) *czernyi* Shatalkin**
   Mesonotum yellow or yellowish brown, without pattern as above; acrostichal setae in 6–8 rows; katepisternum yellow 4
4. Mesonotum with a pair of brown medial stripes between dorsocentral setae rows; abdominal tergites 1–4 blackish brown except for yellow lateral margin and tergites 5–6 blackish brown; surstylus bifurcated apically in lateral view (see Sasakawa, 2002: fig. 14)..... ***H.* (*H.*) *yehliuensis* Sasakawa**
   Mesonotum without brown stripes; abdomen yellow; surstylus not as above 5
5. Arista pubescent, with longest ray about 1/4 height of 1st flagellomere; surstylus hooked apically in lateral and posterior views (see Shi & Yang, 2014: figs 123−125) ..... ***H.* (*H.*) *grahami* Malloch**
   Arista plumose, with longest ray longer than 1/3 height of 1st flagellomere; surstylus not as above 6
6. Wing with brown spots on crossvein r-m and dm-cu 7
   Wing without brown spots on crossvein r-m and dm-cu or only brown spot on dm-cu 8
7. Antennal 1st flagellomere yellowish brown on apical half; abdominal tergites 3–4 or 3–6 with a small brown medial spot; surstylus consisting of an anterior ventral process and a short apical process in lateral view (see Yang *et al*, 2002: figs 17–18) ..... ***H.* (*H.*) *obtusa* Yang, Hu & Zhu**
   Antennal 1st flagellomere entirely yellow; abdominal tergites without brown spots; surstylus with two sharp processes in lateral view (Fig. 17) ..... ***H.* (*H.*) *xunyangensis* Gao & Shi sp. nov.**
8. Wing only with brown spot on dm-cu; surstylus short, slightly curved and acute apically in lateral view (see Shi & Yang, 2014: fig. 147) ..... ***H.* (*H.*) *laticosta* (Thomson)**
   Wing without brown spot on crossvein r-m and dm-cu; surstylus long and curled upward in lateral view (see Gao & Yang, 2002: figs 7−8) ..... ***H.* (*H.*) *longa* Gao & Yang**

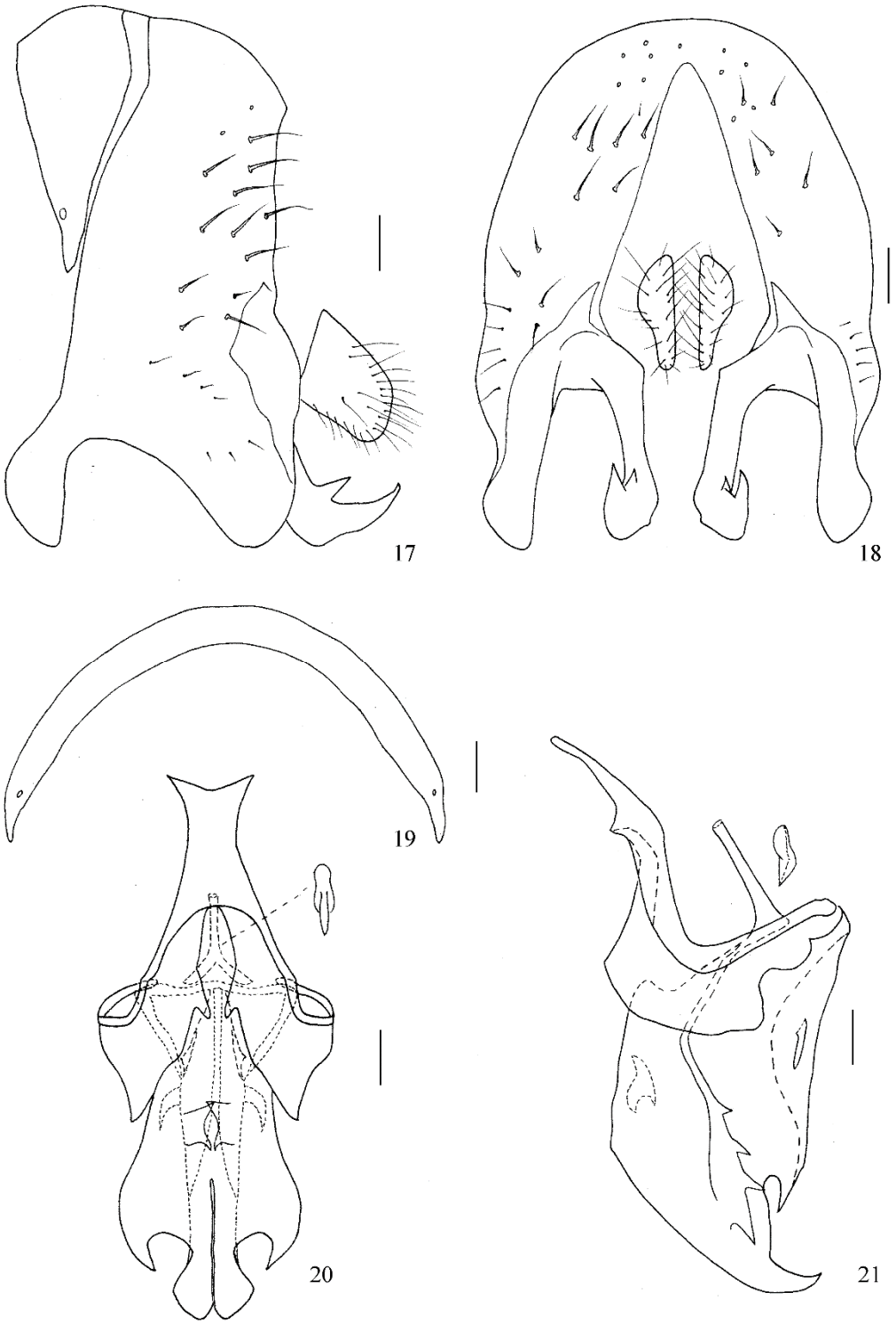
Homoneura (*Homoneura*) *xunyangensis* Gao & Shi sp. nov. (Figs 12−21)

Type material. Holotype ♂ (IMAU), CHINA, Shaanxi, Xunyang County, Zhima Village, 695 m, 2.VIII.2014, anonym.

Figures 12–16. *Homoneura* (*Homoneura*) *xunyangensis* Gao & Shi **sp. nov.**, paratype, male. 12. Habitus, lateral view. 13–14. Head, anterior and lateral view. 15. Thorax, dorsal view. 16. Wing.

Diagnosis The new species is similar to *H.* (*H.*) *laticosta* (Thomson, 1869), but the latter has the following features: crossvein r-m without brown spots, surstylus without furcated apex in posterior view. This species is also similar to *H.* (*H.*) *lagena* Sasakawa & Ikeuchi, 1983, but the latter has the following features: palpus blackish brown and male sternite 6 with 12−13 black spines on posterior margin.

Description. Male. Body length 5.2 mm, wing length 4.4 mm.



Figures 17–21. *Homoneura* (*Homoneura*) *xunyangensis* Gao & Shi **sp. nov.**, paratype, male genitalia. 17. Syntergosternite and epandrial complex, lateral view. 18. Epandrial complex, posterior view. 19. Syntergosternite, anterior view. 20. Phallus complex, ventral view. 21. Phallus complex, lateral view. Scale bar = 0.1 mm.

Head (Figs 13−14) yellow. Frons with brown anterior margin; anterior fronto-orbital setae, posterior fronto-orbital setae and ocellar setae missing. Parafacial yellow with a row of short setulae along apical half of inner margin. Gena about 1/7 height of eye. Antenna yellow, 1st flagellomere 2 times longer than high; arista blackish brown, short plumose, with longest ray as long as 1/2 height of 1st flagellomere. Proboscis and palpus yellow.

Thorax (Figs 12, 15) yellow. Postpronotum pale yellow. Mesonotum with 0+3 dorsocentral setae (1st postsutural dorsocentral seta far away from transverse suture), acrostichal setae in irregular 6 rows. Anepisternum and katepisternum brown. Legs mostly yellow, all tarsomeres 3–5 brown. Fore femur with 5 posterior dorsal setae, 3 posterior ventral setae and ctenidium with 11 short setae; fore tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Mid femur with 7 anterior setae and 1 short apical posterior seta; mid tibia with 1 strong preapical anterior dorsal seta and 2 strong apicoventral setae. Hind femur with 1 preapical anterior dorsal seta and 4 anteroverntral setae; hind tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Wing (Fig. 16) yellow, with brown area extending from costal margin to tip of R_{4+5}; two brown cloudy spots on r-m and dm-cu, respectively; subcostal cell hyaline; costa with 2nd (between R_1 and R_{2+3}), 3rd (between R_{2+3} and R_{4+5}) and 4th (between R_{4+5} and M_1) sections in proportion of 4.8:1.4:1; crossvein r-m at middle of discal cell; ultimate and penultimate sections of M_1 in proportion of 1:1.5; ultimate sections of CuA_1 about 1/7. Halter pale yellow.

Abdomen yellow (Fig. 12). Male genitalia (Figs 17−21): syntergosternite 7+8 semicircular; epandrium broad in lateral view, with a claviform process on anteroventral corner; surstylus with two sharp processes in lateral view and blackish brown connection area with epandrium; hypandrium H–shaped; pregonite with two sharp processes, postgonite triangular with sharp apex; phallus with double concavities in ventral view and sharp at apex in lateral view; phallic apodeme Y-shaped.

Distribution. China (Shaanxi).

Etymology. The new species is named after the collecting locality Xunyang.

singularis-group

Diagnosis. The species group has the body yellow to yellowish brown. Wing has seven brown spots: apical or preapical spot on R_{2+3}, apical or subapical or median spot on R_{4+5}, apical or preapical spot on M_1, and spots on crossvein r-m and dm-cu, rarely apical spot on R_1. Male genitalia are different by: surstylus with one or two processes; hypandrium H-shaped (except for narrow transverse band in *H.* (*H.*) *longicornis* Sasakawa, 2002).

Key to the fifteen species in *singularis*-group (modified from Shen *et al.*, 2018).

1. Wing with a distinct brown spot at tip of R_1 2
   Wing without brown spots at tip of R_1, at most subcostal cell dark apically 8
2. Wing with a brown spot at tip of R_1 connected with a spot on crossvein r-m 3
   Wing with a brown spot at tip of R_1 separated from a spot on crossvein r-m 4
3. Surstylus short with a concavity between two acute processes; postgonite narrow, not extending to tip of phallus in ventral view (see Sasakawa, 2002: fig. 12) ..... ***H.* (*H.*) *concava* Sasakawa**
   Surstylus with 3 acute processes in posterior view; postgonite broad, extending to tip of phallus in ventral view (see Shi & Yang, 2014: figs 334−335) ..... ***H.* (*H.*) *zhejiangensis* Shi & Yang**
4. Parafacial with black inner margin 5
   Parafacial without black inner margin 7
5. Abdomen black, more or less brown-tinged on lateral side, densely whitish gray dusted except for a median black fascia on tergites 2–5; male genitalia: surstylus knife-like with sparse short setulae and sharp in lateral view; hypandrium transverse bar-like (see Sasakawa, 2002: fig. 13) ..... ***H.* (*H.*) *longicornis* Sasakawa**
   Abdomen yellow, tergites 2 or 3–6 with brown or black medial stripes and a pair of lateral spots; surstylus and hypandrium not as above 6
6. Ctenidium on fore femur with 14 short setae; antenna yellow except for 1st flagellomere black on dorsal half; surstylus concaved backward and blunt at apex; phallus with a pair of furcated lateral processes at middle in ventral view (see Shi & Yang, 2014: figs 113−115) ..... ***H.* (*H.*) *fengyangshanica* Shi & Yang**
   Ctenidium on fore femur with 16–17 short setae; antenna entirely yellow; surstylus extending downward (Fig. 30); phallus with a pair of sharp apical processes in ventral view (Fig. 32) ..... ***H.* (*H.*) *dorsocuspidata* Gao & Shi sp. nov.**
7. Wing with a brown preapical spot on M_1, but no stripe-like spot on apical half of CuA_1; surstylus originated from ventral margin of epandrium, broad knife-like in lateral view; postgonite short and wide, acute apically (see Sasakawa & Ikeuchi, 1985: 497: figs 5A–B) ..... ***H.* (*H.*) *aulatheca* Sasakawa & Ikeuchi**
   Wing with a brown apical spot and a narrow subapical spot on apical 1/2 of M_1, and a brown thin transverse stripe-like spot on apical half of CuA_1; surstylus originated from inside of epandrium, falciform in lateral view; postgonite slender, blunt apically (see Shi & Yang, 2014: figs 107, 110) ..... ***H.* (*H.*) *falcata* Shi & Yang**

8. Mesonotum without brown stripes; abdomen without spots 9
   Mesonotum with 2–6 brown stripes; abdomen with spots 11
9. Wing with brown spots on R_{4+5} and M_1 separated; surstylus not as below 10
   Wing with brown spots on R_{4+5} and M_1 confluent, forming a large brown area between two apical spots; surstylus curved and constricted at middle (see Sasakawa & Ikeuchi, 1982: fig. 7) ..... ***H.* (*H.*) *latifrons* Malloch**
10. Abdomen dark brown, surstylus consisting of a small triangular anterior ventral process with setulae and a long digitiform apical process with a tiny middle tooth and acute tip in lateral view (see Gao & Yang, 2004: fig. 44) ..... ***H.* (*H.*) *tianlinensis* Gao & Yang**
    Abdomen pale yellow; surstylus with claviform single process (see Shen *et al.*, 2018: fig. 54) ..... ***H.* (*H.*) *lamellata* (Becker)**
11. Mesonotum with 4–6 brown stripes; epandrium with a blunt triangular subapical process in lateral view 12
    Mesonotum with 2 brown stripes; epandrium straight on posterior margin, without triangular subapical process in lateral view; surstylus claviform, bulged at middle in lateral view 13
12. Arista pubescent, with longest ray shorter than 1/4 height of 1st flagellomere; mesonotum with four brown medial stripes and two postsutural lateral stripes; hypandrium broad, hypandrial apodeme long; phallus with a pair of crossed subuliform dorsal processes in ventral view (see Shi & Yang, 2014: fig. 298) ..... ***H.* (*H.*) *subvittata* Malloch**
    Arista short plumose, with longest ray as long as 1/2 height of 1st flagellomere; mesonotum with four brown medial stripes; hypandrium narrow, hypandrial apodeme short; phallus without crossed subuliform dorsal processes in ventral view (see Yang *et al.*, 2003: figs 29-800B, 29-800C) ..... ***H.* (*H.*) *didyma* Yang, Hu & Zhu**
13. Ctenidium on fore femur with 15–16 short setae; surstylus long claviform, extended ventrally and acute apically with a small ventral process (see Sasakawa, 2001: fig. 26B) ..... ***H.* (*H.*) *vittigera* Sasakawa**
    Ctenidium on fore femur with 11–12 short setae; surstylus not as above 14
14. Surstylus curved as a sickle with an acute apical tooth, several small teeth on dorsal margin and long setulae on dorsal and ventral margins; phallus narrow with a wide and deep apical concavity in ventral view, and apical margin broad and lateral sclerite turned outside apically in lateral view (see Shi & Yang, 2014: figs 133, 136, 137) ..... ***H.* (*H.*) *hongmaoensis* Shi & Yang**
    Surstylus straight claviform, acute apically in lateral view; phallus with truncate apically in ventral view (see Yang *et al.*, 2002: figs 11, 12) ..... ***H.* (*H.*) *singularis* Yang, Hu & Zhu**

***Homoneura* (*Homoneura*) *dorsocuspidata* Gao & Shi sp. nov.** (Figs 22–33)

Type material. Holotype ♂(IMAU), CHINA, Shaanxi, Foping, Yueba, Heilongtan, 27.VIII.2014, Xiumei Lu. Paratypes. 1♂1♀ (IMAU), same data as holotype; 1♂ (IMAU), CHINA, Shaanxi, Foping, Daguping, 1366 m, 27.VIII.2014, Xiumei Lu.

Diagnosis. The new species is similar to *H.* (*H.*) *longicornis* Sasakawa, 2002 from China (Taiwan), but the latter has sparse white pruinosity on frons and dense white pruinosity on face and occiput; surstylus is curved and pointed dorsally, pregonite has short setulae at apex, and phallus rounded and widen apically in lateral view (Sasakawa, 2002: fig. 13). It is also similar to *H.* (*H.*) *fengyangshanica* Shi & Yang, 2014 from China (Zhejiang), but the latter has the following features: the ctenidium on fore femur has 14 short setae; the antenna is yellow except for 1st flagellomere black on dorsal half; the surstylus concaves backward and is blunt at apex in lateral view; the phallus has a pair of furcated lateral processes at middle in ventral view (Shi & Yang, 2014: figs 112, 115).

Description. Male. Body length 4.5–4.6 mm, wing length 4.0–4.1 mm. Female. Body length 4.5 mm, wing length 4.6 mm.

Head (Figs 23–24) yellow. Frons with a pair of brown stripes extending to ocellar triangle, ocellar triangle brown. Ocellar setae longer than fronto-orbital setae. Parafacial yellow with black inner margin and a row of short setulae in same length at apical half. Gena about 1/6 height of eye. Antenna yellow, 1st flagellomere 1.5 times longer than high; arista blackish brown, pubescent, with longest ray shorter than 2/5 height of 1st flagellomere. Proboscis and palpus yellow.

Thorax (Figs 22, 25) brown. Postpronotum yellow. Mesonotum with 0+3 dorsocentral setae (1st postsutural dorsocentral seta very close to transverse suture), acrostichal setae in 6 rows, a pair of prescutellar setae longer than anteriormost dorsocentral setae. Legs yellow except for all tarsomeres 3–5 brown. Fore femur with 4 posterior ventral setae and 4 posterior dorsal setae, ctenidium with 16–17 short setae; fore tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Mid femur with 6 anterior setae and 1 short apical posterior seta; mid tibia with 1 strong preapical anterior dorsal seta and 2 strong apicoventral setae. Hind femur with 1 short preapical anterior dorsal seta; hind tibia with 1 long preapical anterior dorsal seta and 1 short apicoventral seta. Wing (Fig. 28) hyaline, with brown spots as follows: an elliptical spot on apex of R_{2+3}; a small irregular apical spot extending to anterior margin of wing and two small square medial spots on R_{4+5}, one of median spots fused with apical spot on R_{2+3}; a subapical spot on M_1; clouds on crossvein r-m and dm-cu; basal section of R_{4+5} brown; a spot at apex of subcostal cell and R_1. Costa with 2nd (between R_1 and R_{2+3}), 3rd (between R_{2+3} and R_{4+5}) and 4th (between R_{4+5} and M_1) sections in proportion of 5:2.3:1; crossvein r-m before discal cell;

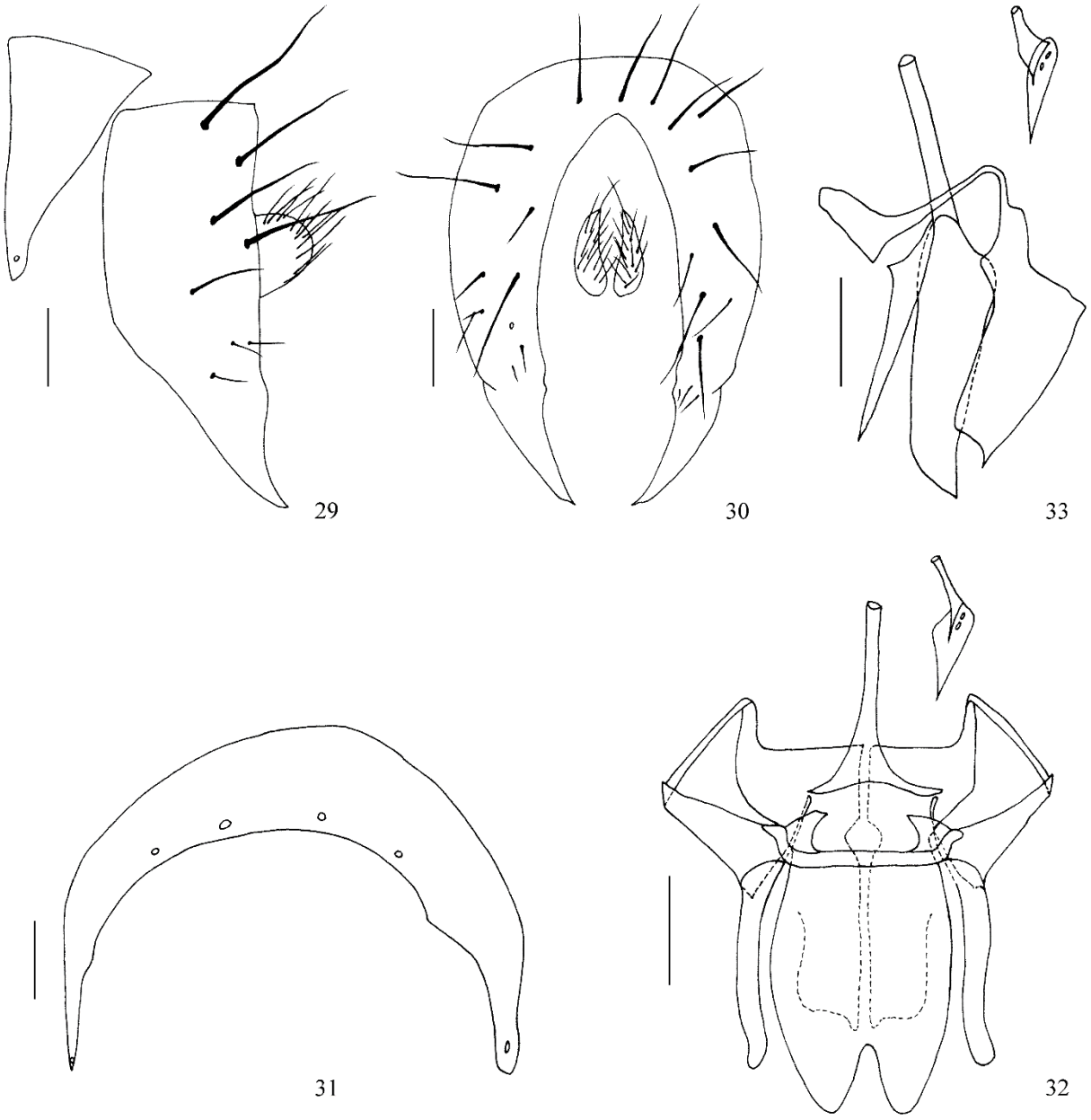
Figures 22–28. *Homoneura* (*Homoneura*) *dorsocuspidata* Gao & Shi **sp. nov.**, paratype, male. 22. Habitus, lateral view. 23–24. Head, anterior and lateral view. 25. Thorax, dorsal view. 26–27. Abdomen, dorsal and lateral view. 28. Wing.

ultimate and penultimate sections of M_1 in proportion of 1:1.6; ultimate sections of CuA_1 about 1/8. Halter white.

Abdomen (Figs 22, 26, 27) yellow or dark yellow, tergites 2–6 each with a brown medial stripe and a pair of brown triangular lateral spots. Male genitalia (Figs 29−33): syntergosternite 7+8 semicircular; epandrium with four pairs of long dorsal setae in lateral view; surstylus long triangular with sparse short setulae and sharp at apex, fused with epandrium; hypandrium nearly H-shaped, hypandrial apodeme short; pregonite coniform and slightly bended in ventral view; phallus with dorsoapical concavity and sharp at apex in lateral view, phallic apodeme shorter than phallus.

Distribution. China (Shaanxi).

Etymology. The new species is named from the Latin, "*dorso*-", prefix meaning dorsal, and "*cuspidatus*", meaning sharp, referring to the phallus being sharp at apex; a feminine adjective.



Figures 29–33. *Homoneura* (*Homoneura*) *dorsocuspidata* Gao & Shi **sp. nov.**, paratype, male genitalia. 29. Syntergosternite and epandrial complex, lateral view. 30. Epandrial complex, posterior view. 31. Syntergosternite, anterior view. 32. Phallus complex, ventral view. 33. Phallus complex, lateral view. Scale bar = 0.1 mm.

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