

Descriptions of five new species of *Helina* Robineau-Desvoidy (Diptera: Muscidae) from China

Wan-qi Xue*, Jing Du & Lu Zhang

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In this paper, five new species belonging to the genus *Helina* Robineau-Desvoidy are described and illustrated, viz *H. combinisetata* sp. n., *H. discombinisetata* sp. n., *H. flavipulchella* sp. n., *H. subsetiventris* sp. n., *H. xingkaiensis* sp. n. Revised couplets for the key to known Chinese species are given.

Xue W. Q., Du, J. & Zhang, L., Institute of Entomology, Shenyang Normal University, Shenyang 110034, China; *Corresponding author's e-mail: xwqfly@sina.com

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1. Introduction

The genus *Helina* Robineau-Desvoidy was described by Robineau-Desvoidy in 1830, with *Helina euphemioidea* subsequently designated as type species. It can be recognized by the following characters (Xue 1998): Vein *Sc* usually rather sinuous, dorsal surface of veins R_1 , R_{4+5} and radial node all bare, ventral surface of radial node with setulae in a few species, vein *M* straight; mid femur usually with a distinct subapical *a*, hind tibia without an isolated strong *pd* between middle and apex, apical *ad* of hind tibia usually longer than tibial diameter; tergites 3 and 4 almost always with a pair of dark black spots; apical parts of male cerci obtuse in posterior view, female terminalia elongate and telescopic.

The species of this genus are found in all regions of the world. 45 Nearctic species have been listed by Hockett (1965a, 1965b) and 89 Palaeartic species by Pont (1986). There are 32 Oriental species (Pont 1977) and 52 Australian and Oceanian species (Pont 1989). Furthermore, 96 Afrotropical species have been listed by Pont (1980) and 90 Neotropical species by Carvalho *et*

al. (2005). China has an abundance of natural resources, and to date more than 167 species have been described from China, which have been summarised by Xue (in Xue *et al.* 2005).

The present paper reports five new species: *H. combinisetata* sp. n., *H. discombinisetata* sp. n., *H. flavipulchella* sp. n., *H. subsetiventris* sp. n., and *H. xingkaiensis* sp. n. The type specimens are deposited in the Diptera collection of the Institute of Entomology, Shenyang Normal University, Shenyang, Liaoning Province, China.

2. Materials and methods

The morphological terminology follows that of McAlpine (1981). Absolute measurements are used for body length in millimetres (mm). Abbreviations used for taxonomic characters include: *acr*, acrostichal setae; *ad*, anterodorsal setae; *av*, anteroventral setae; *dc*, dorsocentral setae; *ial*, intra-alar setae; *a*, anterior setae; *p*, posterior setae; *pd*, posterodorsal setae; post *acr*, postsutural acrostichal setae; *pra*, prealar setae; *pv*, posteroventral setae.

3. Descriptions of new species

3.1. *Helina combinisetata*

Xue & Du sp. n. (Fig. 1)

Types. West China. Holotype male, Saluobulinka, 91°E, 29.6°N, Tibet Autonomous Region, 3660 m a.s.l. Zhong-yu Ma collected 9.V.1961. Paratype, one male, same data as holotype.

Description. Male. Body length 5.8 mm. Head. Eye bare; frons as wide as the distance between posterior ocelli (about 2.0–2.5 times as wide as anterior ocellus); frontal vitta black, obliterated on middle part; 5–6 pairs of frontal setae situated on lower half of frons, fronto-orbital plate, parafacial and gena all with grey pruinosity; parafacial at middle about 1.5 times as wide as flagellomere 1; antenna black, flagellomere 1 about 2.5 times as long as broad; arista

plumose, the longest arista hairs subequal to width of flagellomere 1 (Fig. 1b); genal height about 1/4 of eye height, genal and postgenal hairs black; anterior margin of gena with 1–2 rows of upcurved subvibrissal setulae; proboscis black, prementum with pruinosity, about 2.5 times as long as broad, palpus dark brown, longer than prementum.

Thorax. Black in ground-colour, with grey pruinosity, scutum with 4 dark vittae, the middle pruinosity vitta about 2.5 times as wide as inner vitta; 2 rows of *acr*, post *acr* hair-like, *dc* 2+4, *ial* 0+2, *pra* absent; notopleuron, lateral margin and lower surface of scutellum, prosternum, meron and katepimeron all bare; spiracles fuscous; katepisternal setae 2+2.

Wing. Brownish, basicosta brown, costal spine distinct, longer than cross-vein *r-m*, dorsal

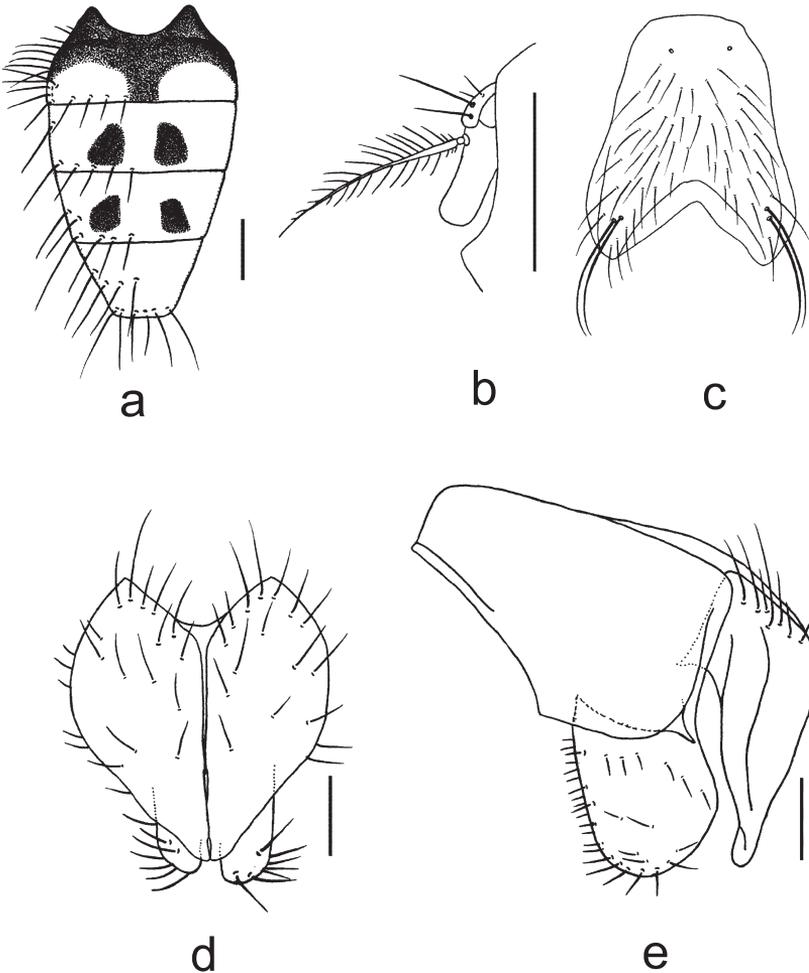


Fig. 1. *Helina combinisetata* Xue & Du sp. n., male. – a. Abdomen in dorsal view, scale bar = 0.5 mm. – b. Antenna in profile, scale bar = 0.5 mm. – c. Sternite 5 in ventral view, scale bar = 0.5 mm. – d. Cerci in posterior view, scale bar = 0.1 mm. – e. Terminalia in profile, scale bar = 0.1 mm.

and ventral surface of radial node bare, distal part of R_{4+5} and M diverging; calypters white to yellowish, haltere yellow.

Legs. Trochanters and distal 2/3 of hind tibia fuscous, remaining parts black; fore tibia without median p ; mid femur with a row of av , with 4–5 strong pv in basal half, with 1 preapical a and 2 pd ; mid tibia with 1 median ad and 2 p ; hind femur with 4–5 strong av in distal half; hind tibia with 2 av and 3 ad ; tarsi longer than tibia, claws and pulvilli normal.

Abdomen. Black in ground-colour, cone-shaped in dorsal view, with greyish-white pruinosity, without shifting dark reflections; on tergite 3 the distance between the spots about equal to their width, on tergite 4 this distance about 1.5 times the width of the spots (Fig. 1a); sternite 1 bare, lateral lobe of sternite 5 with a pair of close-set strong setae (Fig. 1c). Genitalia: Fig. 1d–e.

Female. Unknown.

Etymology. This specific name is from the Latin words *combinare* (= to combine) and *setosus* (= bristly), referring to the pair of close-set strong setae on the lateral lobe of sternite 5 (Fig. 1c).

Remarks. The new species is similar to *H. prominicauda* Wu, 1989, but differs from the latter as follows: pra absent; arista plumose, the longest arista hairs subequal to width of flagellomere 1 (Fig. 1b); hind tibia without pd ; tergite 5 without a pair of distinct brown middle stripes (Fig. 1a). It can be incorporated into Xue's (2005) key to males as follows:

162. Frontal vitta linear 162a
 – Frontal vitta wider than a fronto-orbital plate *H. spinisternita* Fang & Fan, 1993
 162a. Mid tibia with 2 p 162b
 – Mid tibia with 3 p
 H. subsetiventris Xue & Zhang sp. n.
 162b. Frons narrower than the distance between outer margins of posterior ocelli
 H. prominicauda Wu, 1989
 – Frons as wide as the distance between posterior ocelli 162c
 162c. pra absent; arista plumose, the longest arista hairs subequal to width of flagellomere 1; hind tibia without pd
 H. combinisetata Xue & Du sp. n.

- pra about half length of posterior notopleural seta; arista short plumose, the longest arista hairs about half width of flagellomere 1; hind tibia with 1 long pd in sub-basal part

H. discombinisetata Xue & Du sp. n.

3.2. *Helina discombinisetata* Xue & Du sp. n. (Fig. 2)

Types. West China. Holotype male, Road Wuku, Mt. Tian, 43.8°N, 88.2°E, North slope, Xinjiang Uygur Autonomous Region, 2050 m a.s.l. Zhong-yu Ma collected 5.VI.1962. Paratype, two males, same data as holotype.

Description. Male. Body length 6.2 mm. Head. Eye bare; frons as wide as the distance between posterior ocelli (about 3.5 times as wide as anterior ocellus), frontal vitta black, about half width of a fronto-orbital plate, 5 pairs of frontal setae on lower half of frons; fronto-orbital plate, parafacial and gena all with greyish-white pruinosity, parafacial about 1.3 times as wide as flagellomere 1; antenna black, flagellomere 1 about 2.5 times as long as broad; arista short plumose, the longest arista hairs about half width of flagellomere 1 (Fig. 2b); genal height about 1/4 of eye height, genal and postgenal hairs black; anterior margin of gena with 2 rows of upcurved subvibrissal setulae; proboscis black, prementum with pruinosity, about 2.5 times as long as broad, palpus dark brown, longer than prementum.

Thorax. Black in ground-colour, with grey pruinosity, with four black vittae, the inner vitta reaching halfway to scutoscuteellar suture, in front of scutoscuteellar suture with a short middle vitta, 4 rows of acr , post acr 1, dc 2+4, ial 0+2, pra about half length of posterior notopleural seta; notopleuron, lateral margin and lower surface of scutellum, prosternum, meron and katepimeron all bare; katepisternal setae 2+2.

Wing. Slightly brown, basicosta brown, costal spine distinctly longer than cross-vein $r-m$, dorsal and ventral surface of radial node bare, distal part of R_{4+5} and M diverging; calypters yellowish, haltere yellow.

Legs. Trochanters fuscous, remaining parts black; fore tibia without median p ; mid femur with seta-like pv ; hind femur with 5–6 long av on

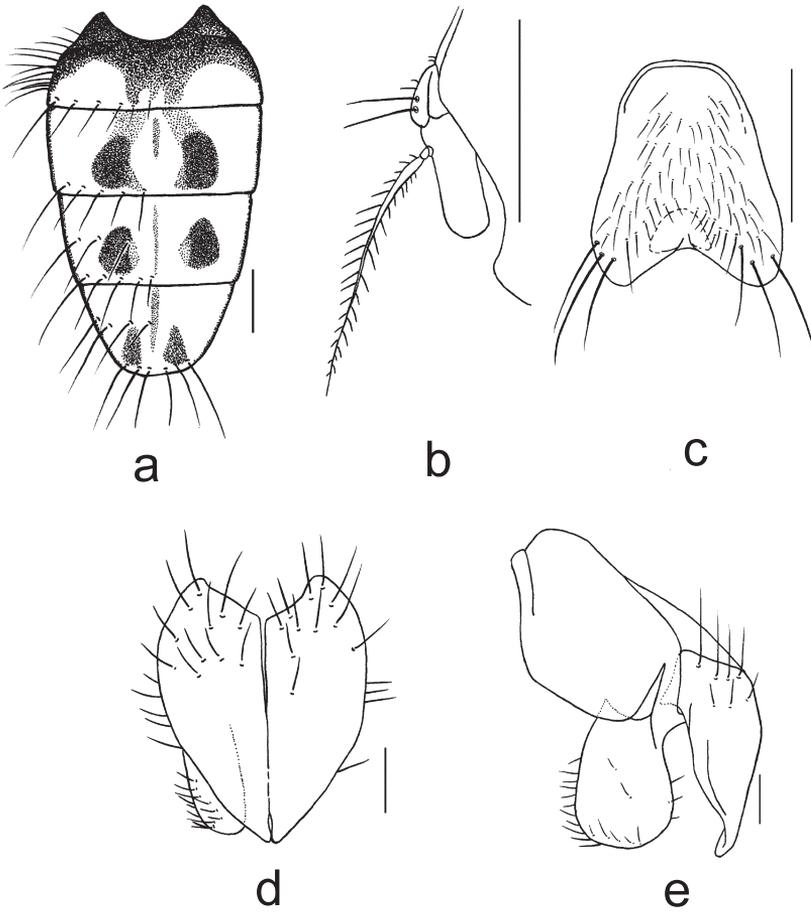


Fig. 2. *Helina discobinetata* Xue & Du sp. n., male. – a. Abdomen in dorsal view, scale bar = 0.5 mm. – b. Antennae in profile, scale bar = 0.5 mm. – c. Sternite 5 in ventral view, scale bar = 0.5 mm. – d. Cerci in posterior view, scale bar = 0.1 mm. – e. Terminalia in profile, scale bar = 0.1 mm.

distal half; hind tibia with 3 *av*, 3 *ad*, 1 long *pd* in sub-basal part; tarsi longer than tibia, claws and pulvilli normal.

Abdomen. Black in ground-colour, ovate in dorsal view, with dense grey pruinosity, without shifting dark reflections; tergite 3 with a pair of black spots which resemble a crescent, tergite 4 with a pair of circular black spots, tergite 5 with a distinct brown middle stripe and a pair of dark brown triangular spots (Fig. 2a); sternite 1 bare; sternite 2 with long hairs (Fig. 2c), sternites 3 and 4 without long setae. Genitalia: Fig. 2d–e.

Female. Unknown.

Etymology. The name indicates the close relationship of this new species to *Helina combinisetata* sp. n.

Remarks. The new species is similar to *H. combinisetata* sp. n., but differs as follows: frons as wide as the distance between posterior ocelli (about 3.5 times as wide as anterior ocellus);

arista short plumose, the longest aristal hairs about half width of flagellomere 1 (Fig. 2b); *pra* about half length of posterior notopleural seta; hind tibia with 1 long *pd* in sub-basal part; tergite 5 with a distinct brown middle stripe (Fig. 2a); surstyli narrower in profile (Fig. 2e). It can be incorporated into Xue's (2005) key to males as indicated in the remarks under the first new species.

3.3. *Helina subsetiventris* Xue & Zhang sp. n. (Fig. 3)

Types. West China. Holotype male, Wulumuqi, 87.6°E, 43.8°N, Xinjiang Uygur Autonomous Region, 20–890 m a.s.l. Wan-qi Xue collected 1.IV.1960. Paratype, one male, same data as holotype.

Description. Male. Body length 7.5–8.0 mm. Head. Eye sparsely covered with short hairs,

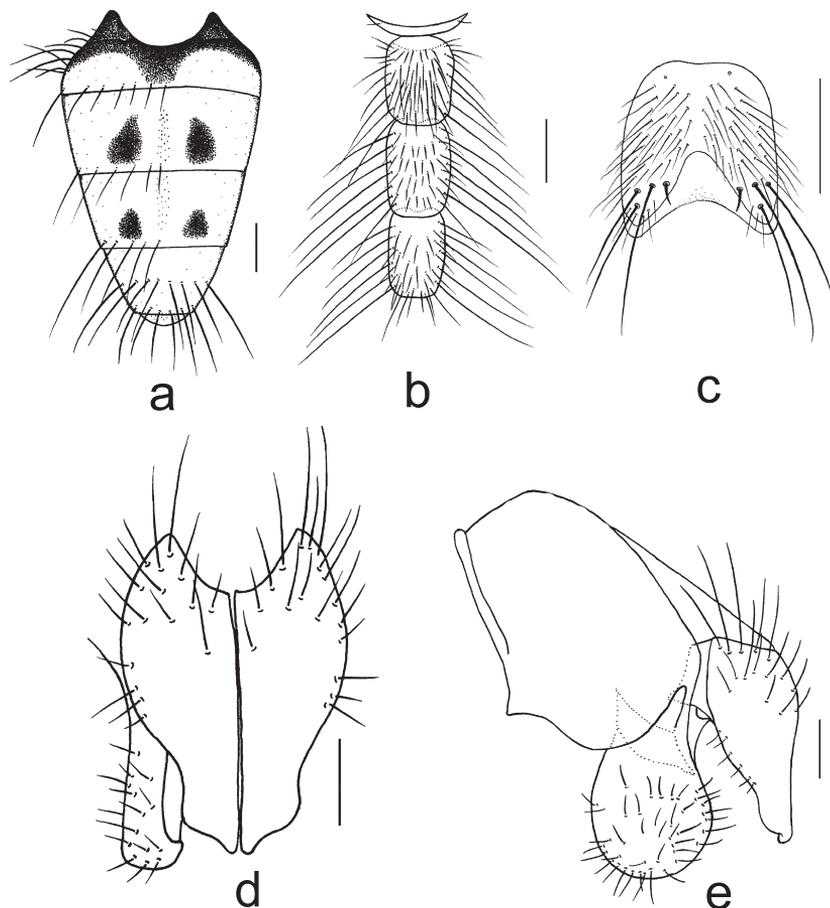


Fig. 3. *Helina subsetiventris* Xue & Zhang sp. n., male. – a. Abdomen in dorsal view, scale bar = 0.5 mm. – b. Sternites 1 to 4 in dorsal view, scale bar = 0.5 mm. – c. Sternite 5 in ventral view, scale bar = 0.5 mm. – d. Cerci in posterior view, scale bar = 0.1 mm. – e. Terminalia in profile, scale bar = 0.1 mm.

frons narrower than the distance between posterior ocelli; frontal vitta brown, narrower than fronto-orbital plate, 5–6 pairs of frontal setae on lower half of frons; parafacial and gena dark brown, with greyish-white pruinosity, parafacial about 1.2 times as wide as flagellomere 1; antenna black, flagellomere 1 about 2.5 times as long as broad; arista long plumose, the longest aristal hairs about 1.3 times as wide as flagellomere 1; lower facial margin not projecting, vibrissal angle situated behind frontal angle in profile; gena with grey pruinosity, with 2 rows of genal setae, genal height about 1/4 of eye height, genal and postgenal hairs black; proboscis with pruinosity, prementum about 2.0 times as long as broad, palpus black, longer than prementum.

Thorax. Black in ground-colour, with grey pruinosity; scutum with 4 black vittae, the inner vitta not reaching scutoscutellar suture; 4 pairs of *acr*, *dc* 2+4, *ial* 0+2, prealar seta about 2/3 length

of posterior notopleural seta, notopleuron, lateral margin and lower surface of scutellum, prosternum, meron and katepimeron all bare; katepisternal setae 2+2.

Wing. Hyaline, veins brown, basicosta brown, costal spine distinct, shorter than cross-vein *r-m*, dorsal and ventral surface of radial node bare, distal part of R_{4+5} and *M* straight, calypters slightly yellow, halteres yellow.

Legs. Hind tibia brown, remaining parts black; fore tibia without median *p*; mid femur with a row of *pd*, becoming short and thin toward apex; mid tibia with 3 *p*; hind femur with a sparse row of long *av*, with *pv* on distal 1/4; hind tibia with 2–3 *av*, 3 *ad*, with 1 short *pd* in sub-basal part, with seta-like *p* on median part; tarsi longer than tibiae, claws and pulvilli long.

Abdomen. Black in ground-colour, cone-shaped in dorsal view, with dense greyish-yellow pruinosity, without shifting dark reflections; ter-

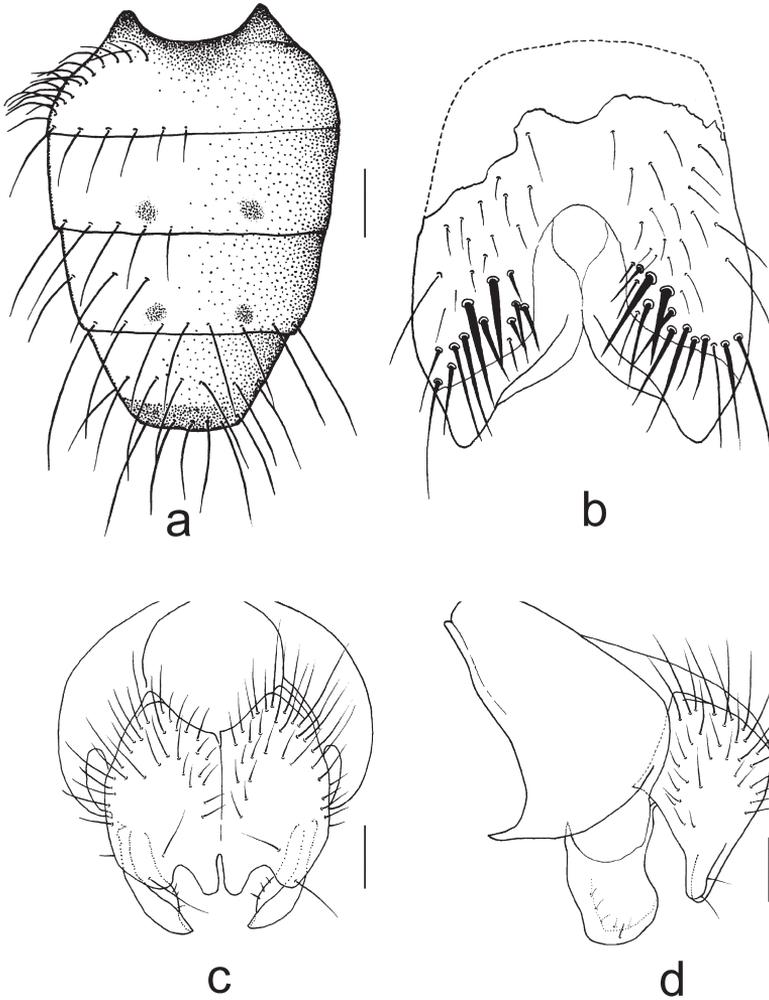


Fig. 4. *Helina flavipulchella* Xue & Du sp. n., male. – a. Abdomen in dorsal view, scale bar = 0.5 mm. – b. Sternite 5 in ventral view, scale bar = 0.5 mm. – c. Terminalia in posterior view, scale bar = 0.1 mm. – d. Terminalia in profile, scale bar = 0.5 mm.

gites 3 and 4 each with a pair of dark black triangular spots (Fig. 3a), posterior marginal bristles developed; sternite 1 with 1 pair of small hairs, tergites 2 to 4 with long hairs on lateral margins, the longest hairs on sternite 3 about 2.0 times as long as the sternite (Fig. 3c). Genitalia: Fig. 3d–e.

Female. Unknown.

Etymology. This specific name is from the Latin words *sub* (= beneath), *seta* (= bristle) and *venter* (= stomach), and refers to the well developed posterior marginal bristles on sternite 3.

Remarks. The new species is similar to *H. arctata* Collin, 1953, but differs from the latter as follows: abdomen with dense greyish-yellow pruinosity; sternite 3 with posterior marginal bristles well developed, longer than the bristles of sternite 4 (Fig. 3b); tergites 3 and 4 each with a

pair of dark black triangular spots (Fig. 3a); cerci broad, surstyli almost circular in profile (Fig. 3d–e). It can be incorporated into Xue's (2005) key to males as indicated in the remarks under the first new species.

3.4. *Helina flavipulchella* Xue & Du sp. n. (Fig. 4)

Types. Southwest China. Holotype male, Xishuangbanna, 100.9°E, 21.8°N, Yunnan Province, 400 m a.s.l., Wan-qi Xue collected 6.VI.1962. Paratype, two males, same data as holotype.

Description. Male. Body length 6.5 mm. Head. Eye bare, the upper and middle facets enlarged; frons narrower than width of anterior

ocellus, frontal vitta brown, obliterated on middle part; 4 pairs of frontal setae on lower half of frons, parafacial and gena with silvery pruinosity; parafacial about 4/5 width of flagellomere 1; scape, pedicel and base of flagellomere 1 all yellow, otherwise flagellomere 1 brown, flagellomere 1 about 3.0 times as long as broad; arista haired, the longest aristal hairs about 2/5 width of flagellomere 1; genal height about 1/5 of eye height, genal and postgenal hairs black; proboscis short, prementum about 2.0 times as long as broad, palpus yellow, longer than prementum.

Thorax. Black in ground-colour, with dark grey pruinosity, scutum with four black vittae, the middle pruinose vitta about half width of the inner vitta, the inner vitta reaching scutoscutellar suture; 6 rows of hair-like *acr*, dc 2+4, *pra* hair-like, notopleuron, lateral margin and lower surface of scutellum, prosternum, meron and katepimeron all bare; katepisternal setae 1+2.

Wing. Hyaline, basicosta yellow, costal spine short; dorsal and ventral surfaces of radial node bare, distal part of R_{4+5} and *M* diverging, calypters slightly yellow, haltere yellow.

Legs. Tarsi black, remaining parts yellow; fore tibia with 1 median *p*; mid femur with a row of *a* and 5 *pv* in basal half, 1 preapical *a* and 2 *pd*; mid tibia with 2 to 3 *p*; hind femur with *av* in distal half, without *pv*; hind tibia with 4 *av* and 2 *ad*.

Abdomen. Ovate in dorsal view, black in ground-colour, with greyish-yellow pruinosity, from distal 1/4 of tergite 5 to apical part of tergite 9 all yellow, tergites 3 and 4 each with a pair of small brown spots (Fig. 4a), without shifting dark reflections, lateral marginal setae and distal setae developed; sternite 1 bare, sternites 2 to 4 each with a pair of long setae on posterior margin. Sternite 5 with numerous spinose setae on apical margin (Fig. 4b). Genitalia: Fig. 4c–d.

Female. Unknown.

Etymology. The name of this species is based on *H. pulchella* Ringdahl, 1918, together with the Latin word *flavus* (= yellow), referring to the greyish-yellow pruinosity on distal 1/4 of tergite 5.

Remarks. This species is similar to *H. pulchella* Ringdahl, 1918, but differs as follows: upper and middle eye facets enlarged; frons narrower than width of anterior ocellus; parafacial narrower than width of flagellomere 1; flagellomere 1 about 3.0 times as long as broad; palpus

yellow; hind femur without *pv*; hind tibia without *p*; abdomen ovate in dorsal view; tergites 3 and 4 each with a pair of small spots (Fig. 4a), from distal 1/4 of tergite 5 to tergite 9 with greyish-yellow pruinosity. It can be incorporated into Xue's (2005) key to males as follows:

- | | | |
|-------|--|--|
| 112. | Palpus fuscous | 113 |
| – | Palpus yellow | 112a |
| 112a. | Eye with dense hairs; arista short plumose, the longest aristal hairs about 2/3 width of flagellomere 1; fore tibia with 1–2 median <i>p</i> , hind tibia with 6–7 <i>av</i> | |
| | | <i>H. subpubiseta</i> Xue, 1986 |
| – | Eye bare; arista haired, the longest aristal hairs about 2/5 width of flagellomere 1; fore tibia with 1 median <i>p</i> , hind tibia with 4 <i>av</i> and 2 <i>ad</i> | |
| | | <i>H. flavipulchella</i> Xue & Du sp. n. |

3.5. *Helina xingkaiensis* Xue & Zhang sp. n. (Fig. 5)

Types. Northeast China. Holotype male, Xingkai community, 45.6°N, 132°E, Mt. Mi, Heilongjiang Province, Wan-qi Xue collected 24.VIII. 1974. Paratype, one male, same data as holotype.

Description. Male. Body length 6.5 mm. Head. Eye sparsely covered with short hairs, frons about 1.3 times as wide as posterior ocelli (about 2.0 times as wide as flagellomere 1), frontal vitta black, about 1.3 times as wide as fronto-orbital plate, 7–8 pairs of frontal setae on lower 3/5 of frons, fronto-orbital plate, parafacial and gena all with greyish pruinosity, parafacial about 1.5 times as wide as flagellomere 1; antenna black, flagellomere 1 about 3.0 times as long as broad; arista long plumose, the longest aristal hairs about 1.2 times as wide as flagellomere 1; lower facial margin not projecting, vibrissal angle situated behind frontal angle in profile; genal height about 1/5 of eye height, anterior margin of gena with 1 row of upcurved subvibrissal setulae, genal and postgenal hairs black; proboscis with pruinosity, prementum about 2.0 times as long as broad, palpus black, longer than prementum.

Thorax. Black in ground-colour, with grey pruinosity, scutum with four broad vittae, the middle pruinose vitta about half length width of

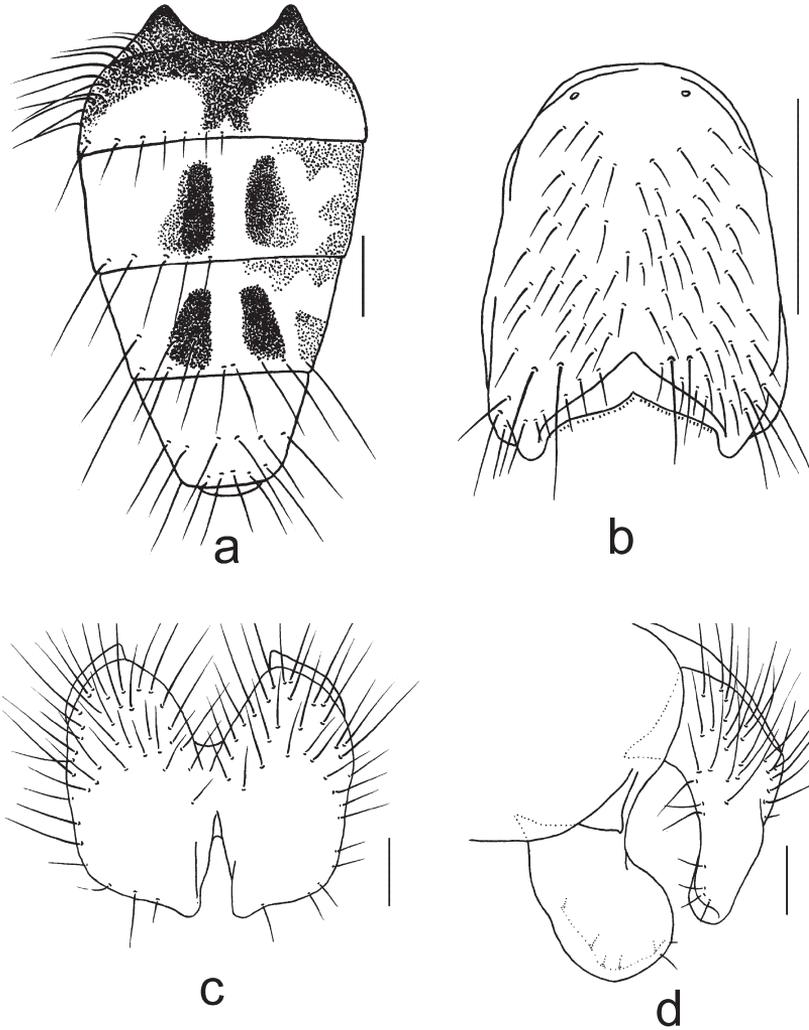


Fig. 5. *Helina xing-kaiensis* Xue & Zhang sp. n., male. – a. abdomen in dorsal view, scale bar = 0.5 mm. – b. sternite 5 in ventral view, scale bar = 0.5 mm. – c. cerci in posterior view, scale bar = 0.1 mm. – d. terminalia in profile, scale bar = 0.5 mm.

inner vitta, the inner vitta reaching scutoscutellar suture; 8 rows of hair-like *acr*, *dc* 2+4, *ial* 0+2, *pra* hair-like, about 1/3 length of posterior notopleural seta; notopleuron, lateral margin and lower surface of scutellum, prosternum, anepimeron, meron and katepimeron all bare; katepisternal setae 2+2.

Wing. Hyaline, veins brown, tegula and basicosta brownish-yellow, costal spine longer than cross-vein *r-m*, dorsal and ventral surface of radial node bare, distal part of R_{4+5} and *M* straight, diverging apically, calypters yellowish, haltere yellow.

Legs. Entirely black; fore tibia without median *p*; mid femur with 3 strong *pv* on basal part which become short and thin towards apical part;

mid tibia with 2 *p*; hind femur with a complete row of *av*, which are strong on distal 2/5, with a complete row of seta-like *pv*; hind tibia with 6 strong *av*, 2 *ad*, and a row of a setae on apical part; tarsi longer than tibiae, each tarsomere of fore leg with sensory hairs, claws and pulvilli long and large.

Abdomen. Ground-colour black, cone-shaped in dorsal view, with greyish-yellow pruinosity, tergites 3 and 4 each with a pair of black triangular spots (Fig. 5a), tergites 4 and 5 with lateral marginal setae and apical setae developed; sternite 1 bare; sternite 2 with dense slender hairs, sternites 2 to 4 each with a pair of stronger long setae on apical part. Sternite 5: Fig. 5b. Genitalia: Fig. 5c–d.

Female. Unknown.

Etymology. The specific name refers to the type locality, Xingkai community in Heilongjiang Province.

Remarks. The new species is allied to *H. raoheensis* Liu, Cui & Ma, 2000, but differs as follows: longest arisal hairs about 1.2 times as wide as flagellomere 1; legs entirely black; fore tibia without median *p*; mid tibia with 2 *p*, in a row; hind femur with a complete row of seta-like *pv*; hind tibia with 6 strong *av*; tergite 4 with a pair of spots; male cerci and surstyli longer. It can be incorporated into Xue's (2005) key to males as follows:

115. Hind femur with *av* and *pv* not fringe-like 115a
 – Hind femur with slender *av* and *pv*, usually fringe-like in most species 117
 115a. Hind tibia with 1–2 short pre-basal *pd*, mid tibia with *pd* and *p*, fore tibia with a median *p* 116
 – Hind tibia without pre-basal *pd*, mid tibia with 2 *p*, fore tibia without a median *p*
H. xingkaiensis Xue & Zhang sp. n.

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References

- Carvalho, C. J. B. de, Couri, M. S., Pont, A. C., Pamplona, D. & Lopes, S. M. 2005: A catalogue of the Muscidae (Diptera) of the Neotropical Region. — *Zootaxa* 860: 1–282.
- Huckett, H. C. 1965a: The Muscidae of northern Canada, Alaska, and Greenland (Diptera). — *Mem. Entomol. Soc. Can.* 42: 253–262.
- Huckett, H. C. 1965b: Family Muscidae. — In: Stone, A., Sabrosky, C. W., Wirth, W. W., Foote, R. H. & Coulson J. R. (eds), *A catalog of the Diptera of America north of Mexico: 885–889*. United States Department of Agriculture, Agriculture Handbook 276.
- McAlpine, J. F. 1981: Morphology and terminology – adults. — In: McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. & Wood, D. M. (eds.), *Manual of Nearctic Diptera. Volume 1. – Agriculture Canada Monograph 27: 9–63*.
- Pont, A. C. 1977: Family Muscidae. — In: Delfinado, M. D. & Hardy, D. E. (eds), *A Catalogue of the Diptera of the Oriental region 3: 477–479*. University of Hawaii, Honolulu.
- Pont, A. C. 1980: Family Muscidae. — In: Crosskey, R. W. (ed.), *Catalogue of the Diptera of the Afrotropical Region: 734–737*. British Museum, London.
- Pont, A. C. 1986: Family Muscidae. — In: Soos, A & Papp, L (ed.), *Catalogue of Palaearctic Diptera 11: 135–153*. Elsevier, Amsterdam, and Akademiai Kiado, Budapest.
- Pont, A. C. 1989: Family Muscidae. — In: Evenhuis, N. L. (ed.), *Catalog of the Diptera of the Australasian and Oceanian Regions. Bishop Museum Special Publication 86: 685–686*.
- Xue, W. Q. 1998: Muscidae. — In: Xue, W. Q. & Chao, J. M. (eds), *Flies of China. Vol. 1: 1116–1165* [In Chinese.]. Liaoning Science and Technology Press, Shenyang.
- Xue, W. Q., Feng, Y & Tong, Y. F. 2005: A taxonomic study on *Helina* R.-D. (Diptera: Muscidae) from China. — *Oriental Insects* 39: 35–62.