

ORIGINAL ARTICLE

A genus and three species of Anthomyzidae newly recorded from China (Diptera)

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Abstract The genus *Stiphrosoma* Czerny, 1928 with *S. humerale* Roháček & Barber, 2005 and two species, *Anthomyza elbergi* Andersson, 1976 and *A. pallida* (Zetterstedt, 1838), are newly recorded from China. A key to all genera and species of the family in China is provided.

Key words Hanma National Reserve, Inner Mongolia, Anthomyzinae, new record, key.

1 Introduction

The family Anthomyzidae Czerny, 1903 is a small family of acalyptrate Diptera with 140 species, 26 genera and 2 subfamilies worldwide, of which 17 species, 5 genera and 1 subfamily are recorded in China (Roháček, 2018, 2020). The flies are generally collected from damp grassland habitats. As their larvae are usually phytosaprophagous, they are not reported as pests of cultivated grasses or cereals so far (Roháček, 2006, 2009).

The family can be diagnosed by the following features: Body length 1.3–4.5 mm. Head often with 2 (rarely 1 or 3) reclinate long orbital setae and 1–2 microsetulae in front of anterior orbital setae; posterior vertical setae small, convergent or crossed; 1 long vibrissa strong. Thorax with 0–1 presutural seta (on the same vertical line as 0–1 supraalar seta), 1–3 postsutural dorsocentral setae; presutural dorsocentral setae and pteropleural setulae absent. Fore femur with posteroventral ctenidial spine (secondarily absent in several genera), tibiae without dorsal preapical setae. Wing with 1–2 costal break (or only attenuated in place of subcostal break), often with sparse spinulae between R_1 and R_{2+3} ; Sc weak and fused to R_1 , or attached to R_1 and forming a preapical kink near subcostal break on R_1 ; cell cup usually closed; A_1 not reaching wing margin. Male internal genitalia with complex folding apparatus; phallapodeme with robust ventral fulcrum; distiphallus bifid, formed by saccus and filum. Female often with a tergosternum 7 and the internal sclerites in the genital chamber (Vockeroth, 1987; Roháček, 2006, 2009).

Here the genus *Stiphrosoma* Czerny, 1928 with *S. humerale* Roháček & Barber, 2005, and another two species, *Anthomyza elbergi* Andersson, 1976 and *A. pallida* (Zetterstedt, 1838), are newly recorded from China.

All examined specimens were collected from Hanma National Nature Reserve, Northeast Inner Mongolia, which is located at the western side of the Daxinganling. It is one of the most intact areas of primeval bright coniferous forests (also called Taiga) in China and full of rich diversity of wildlife resources. A total 570 species of insects have hitherto been recorded in the Hanma National Nature Reserve.

2 Materials and methods

General terminology follows Roháček (2006, 2009). Genitalia preparations were made by removing and macerating

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the apical portion of the abdomen in warm lactic acid for 5–13 min, then rinsing them with purified water for dissection and study. After examination in glycerine, genitalia were transferred and stored in a microvial with glycerine. Specimens were examined with a Nikon 1500 dissection microscope. Adult images were taken with a Nikon DS-Fi2 digital camera and a series of images montaged using Helicon Focus (©HeliconSoft). All images were further processed with Adobe Photoshop CS 6.0®.

Specimens examined were deposited in the entomological collection of Inner Mongolia Agricultural University, Hohhot (IMAU).

3 Result

3.1 Key to all species and genera of Anthomyzidae in China (modified from Roháček, 2006, 2008, 2009, 2018, 2020)

1. Fore femur without posteroventral ctenidial spine, only with a row of long setae (Roháček, 2006: fig. 522), at most with shortened thickened setae in anteroventral row (Roháček, 2018: fig. 51) 2
- Fore femur with distinct posteroventral ctenidial spine (Figs 1, 6, 16, 20, 25, 27) in addition to a row of long setae 7
2. Arista ciliate (Roháček, 2018: fig. 2); mesonotum with flattened dorsal surface (Roháček, 2018: fig. 7); presutural, supra-alar and propleural setae absent (cf. Roháček, 2018: fig. 3); fore femur anteroventrally with a row of short thickened setae (Roháček, 2018: fig. 27); C with distinct spine-like setae among fine setulae (Roháček, 2018: fig. 4); male genitalia: gonostylus elongate but bent strongly medially (Roháček, 2018: figs 9, 13); phallapodeme (= aedeagal apodeme) basally with large flat winglike lobes (Roháček, 2018: figs 8, 19); female genital chamber with internal sclerotization formed by symmetrical but very complex posterior sclerites fused posteroventrally to inner side of sternite 8, a transversely ellipsoid annular sclerite and a large, vesicular, kidneyshaped ventral receptacle (Roháček, 2018: figs 28, 30) (**Genus *Marshallya* Roháček**) ***M. platythorax* Roháček**
- Arista pectinate (Roháček, 2006: figs 66, 85); mesonotum with convex dorsal surface; presutural, supra-alar (Roháček, 2006: fig. 66) and propleural setae present although sometimes short; fore femur anteroventrally with only fine long setae; C lacking spine-like setae among fine setulae (**Genus *Amygdalops* Lamb**) 3
3. Wing with preapical brown spot confluent with distinct darkened stripe along R₄₊₅ (Roháček, 2008: fig. 164); male with elongate, slender and apically tapered gonostylus (Roháček, 2008: fig. 43) and distinctive transandrium (Roháček, 2008: fig. 41) with dorsomedial arched sclerite; female sternite 6 narrow (Roháček, 2008: fig. 47), tergite 7 anteriorly with pale-pigmented crescent-shaped area (Roháček, 2008: fig. 45) and sternite 7 small, tapered anteriorly and simply pigmented (Roháček, 2008: fig. 47)..... ***Am. cuspidatus* Roháček**
- Wing with only preapical brown spot; male genitalia and female postabdomen not as above 4
4. Legs with femora and tibiae unicolourous yellow..... 5
- Legs with femora and tibiae partly pale brown..... 6
5. Head with inner vertical setae markedly shorter and weaker than (often less than half of length of) outer vertical setae; male hind femora with only 5 thickened and shortened setae in posteroventral row; gonostylus large and broad also apically (Roháček, 2008: figs 60, 62); caudal process broad, ventrally forked (Roháček, 2008: fig. 58); anterolateral corners of female tergite 7 extended on ventral side and almost meeting medially; sternite 7 small, anteriorly tapered (Roháček, 2008: fig. 67); spermathecae spherical (Roháček, 2008: fig. 65)..... ***Am. curtisi* Roháček**
- Head with inner vertical setae longer, about two-thirds length of outer vertical setae; male hind femora with 7–8 thickened and shortened setae in posteroventral row; gonostylus distally tapered (Roháček, 2008: figs 100, 103); caudal process formed by 2 sclerites, each having a lateral projection (Roháček, 2008: fig. 101); anterolateral corners of female tergite 7 extended on ventral side, but not meeting medially (Roháček, 2008: fig. 106); female sternite 7 large trapezoidal, with dark on rounded anterolateral corners and pale central area (Roháček, 2008: fig. 106); spermathecae shortly pyriform (Roháček, 2006: fig. 113)..... ***Am. nigrinotum* Sueyoshi & Roháček**
6. Male hind femur with 5–7 short and thickened posteroventral setae in distal third, but these setae distinctly longer and more widely spaced; abdomen with small pale lateral spots on tergite 5 in the male and on tergites 4 and 5 in the female; male genitalia with posteroventrally expanded hypandrium and caudal process transandrium keel-like medially (Roháček, 2018: fig. 35); female sternite 7 broad and rounded (Roháček, 2018: fig. 40); female sternite 8 modified, with two pointed lateral processes and posteromedially bulged (Roháček, 2018, figs 42, 43); spermathecae pyriform with thick spines (Roháček, 2018: fig. 44) ***Am. bisinus* Roháček**
- Male hind femura with 5 short and thickened posteroventral setae in denser comb in distal third (Roháček, 2018: fig. 51); abdomen with all tergites uniformly brown or dark brown in both sexes; male genitalia with hypandrium posteroventrally slender (Roháček, 2018: fig. 45) and caudal process of transandrium short and narrow (Roháček, 2018: fig. 47); female sternite 7 elongate, longer than wide, abruptly tapered anteriorly and truncate apically (Roháček, 2018: figs 52, 58); female sternite 8 simple, only with posteromediodorsal incision (Roháček, 2018: fig. 55); spermathecae spherical, with a few grain-like spines (Roháček, 2018: fig. 61) ***Am. sevciki* Roháček**

7. Wing with white hyaline band along anterior third and longitudinal brown pattern in the middle widening towards wing apex (Roháček, 2006: fig. 447; Roháček, 2018: fig. 69); postvertical, presutural and supraalar setae particularly long; male synsternite 6–7 unusually large (Roháček, 2006: fig. 448); phallopore with large epiphallus projecting posteroventrally (Roháček, 2006: fig. 455); saccus of distiphallus with reduced membranous part and extremely large spines (Roháček, 2006: fig. 454); female sternite 8 large, rounded, convex, with a narrow posteromedial incision (Roháček, 2006: fig. 460) and sclerotization of female genital chamber complex, with right anterodorsal sclerite markedly projecting anteriorly (Roháček 2006: figs 461, 463) (**Genus *Epischnomyia* Roháček**) 8
 Wing generally unicolourous, hyaline, without brown and white pattern, at most pale brownish tinged; postvertical, presutural and supraalar setae usually shorter; male synsternite 6–7 shorter; phallopore without epiphallus; saccus of distiphallus with membranous part well developed and with small spines; female sternite 8 differently shaped; sclerites of female genital chamber simpler, right anterior sclerite never projecting 9
8. Hind male femur with 4–7 shortened and thickened posteroventral setae in apical third; male genitalia: gonostylus wider, apically bent and more acute (Roháček, 2009: fig. 111); for female postabdomen, genital chamber and associated structures (Roháček, 2009: figs 115–121) ***E. merzi* Roháček**
 Hind femur with 11–12 shortened, thickened posteroventral setae in distal half, densely arranged (Roháček, 2018: fig. 71); male genitalia: gonostylus slender, elongate, with 2 small denticles on apex (Roháček, 2018: 76); female unknown ***E. tkoci* Roháček**
9. Wing usually shorter than body length, crossvein r-m situated in basal third of discal medial cell; arista distinctly but sparsely pectinate (Roháček, 2006: figs 591, 592); mesonotum with presutural seta usually small or absent; female abdomen 7 dorsomedially divided or unpigmented. Mesonotum brown to dark brown, with only humeral and notopleural areas yellow or ochreous (Figs 25, 27); male genitalia: epandrium relatively broad (Roháček, 2006: fig. 608); gonostylus elongate but relatively broad (Roháček, 2006: fig. 611); transandrium with sinuous transverse dark pattern (Roháček, 2006: fig. 614); female internal sclerites short and more transverse (Roháček, 2006: figs 617, 619) (**Genus *Stiphrosoma* Czerny**) ***S. humerale* Roháček & Barber**
 Wing distinctly longer than body length, crossvein r-m usually situated at about middle or slightly in front of middle of discal medial cell; arista shortly ciliate or very densely haired; mesonotum with presutural seta distinct; female abdomen 7 dorsomedially undivided; male genitalia not as above 10
10. Vertex of head with silvery microtomentose spots or short stripes between frontal triangle and posterior part of orbital plates (Roháček, 2009: fig. 72); male genitalia: saccus of distiphallus only with some tubercles (Roháček, 2009: fig. 95); filum with two sclerites attached closely or fused partly, terminating in widened spinulose or denticulate apex (Roháček, 2009: fig. 94); female tergite 7 and sternite 7 always fused to form complete tergosternal ring (cf. Roháček, 2009: figs 97, 102) (**Genus *Arganthomyza* Roháček**) 11
 Vertex of head usually without silvery microtomentose spot between frontal triangle and orbital plates, if similar whitish or silvery white microtomentose spots present, then female tergite 7 and sternite 7 disparate; male genitalia: saccus of distiphallus at least with small spinulae and usually with short, robust and pigmented spines; filum formed by single sclerite being usually distally attenuated, rarely expanded and provided with robust projections; female tergite 7 and sternite 7 variable, disparate or fused into tergosternal ring (**Genus *Anthomyza* Fallén**) 12
11. Mesonotum with sparse greyish microtomentum and with a silvery grey microtomentose lateral spot between presutural and both notopleural setae; hind male femur with 6–7 shortened and distinctly thickened posteroventral setae in distal fourth to third; hind basitarsus with 2–3 short thickened setae (Roháček, 2009: fig. 103); male genitalia: gonostylus wider, with apex less projecting (Roháček, 2009: fig. 96); saccus with armature reduced to minute tubercles (Roháček, 2009: fig. 95); apex of filum finely spinulose (Roháček, 2009: fig. 94); female genital chamber with annular sclerite unusually robust (Roháček, 2009: fig. 104)
 ***Ar. versitheca* Roháček**
 Mesonotum almost entirely bare and glossy (Roháček, 2018: fig. 119); hind male femur with 4 shortened and distinctly thickened posteroventral setae in distal third; hind basitarsus with a single robust seta (Roháček, 2018: fig. 118); male genitalia: saccus with membranous distal part relatively voluminous and apically covered with numerous larger hyaline tooth-like tubercles (Roháček, 2018: fig. 128); apex filum with several flat lobe-shaped projections and a few acute teeth (Roháček, 2018: fig. 127); female unknown
 ***Ar. hyperseta* Roháček**
12. Pleural part of thorax pale yellow, at most with brown stripe along dorsal margin 13
 Pleural part of thorax brown to dark brown, concolourous with mesonotum 16
13. Wing with longitudinal brown pattern (Roháček, 2020: fig. 24); gonostylus strongly tapered towards acute apex (Roháček, 2020: figs 28, 36); female tergosternum 7 with large posteromedial pale brown area dorsally (Roháček, 2020: fig. 41), original sternite 7 reduced to very narrow membranous strip with single pair of setae (Roháček, 2020: fig. 42) ***An. caesarea* Roháček**
 Wing unicolourous (Roháček, 2020: fig. 26); gonostylus and female terminalia not as above 14
14. Pleural part of thorax completely pale yellow, dorsally without brown stripe; body bright yellow except for abdomen brown (Roháček, 2018: fig. 98); male hind femur with thickened and shortened posteroventral setae in distal two-thirds and those in middle third duplicated or even triplicated; male genitalia: gonostylus about as long as height of epandrium, with elongate suboval outline and convex outer side, and with apex shortly and broadly bilobed (Roháček, 2018: fig. 102); filum robust and terminating in 3 lobate closely attached projections (Roháček, 2018: figs 104, 106). Female genital chamber with internal sclerites reduced, only a large annular sclerite present (Roháček, 2018: figs 114, 116) and spermathecae elongately pyriform, with spinulose basal part (Roháček, 2018: fig. 115) ***An. sulphurea* Roháček**

- Pleural part of thorax only partly yellow, with more (Roháček, 2018: fig. 83) or less (Figs 25, 27) distinct brown stripe along dorsal margin; male hind femur with thickened and shortened posteroventral setae in distal two-thirds never duplicated; male and female terminalia different..... 15
15. Head yellow except for occiput and ocellar triangle dark brown; cephalic setae very long (Roháček, 2018: fig. 82); humeral callus whitish yellow (Roháček, 2018: fig. 83); female tergite 7 long and large, extended ventrally (Roháček, 2018: figs 86, 90); sternite 7 submembranous, distinctly micropubescent and long-setose (Roháček, 2018: fig. 89); female genital chamber with internal sclerotization formed by a posterior pair of crooked sclerites, large annular sclerite and a transverse wing-like sclerite posterior to ventral receptacle (Roháček, 2018: figs 93, 95); spermathecae elongately cylindrical (Roháček, 2018: fig. 92); male unknown **An. ornata Roháček**
Head generally paler, also occiput yellow or dark yellow, only ocellar triangle brown (Figs 17, 21); humeral callus at least partly brown (Figs 18, 23); male genitalia: epandrium yellow or pale brown, gonostylus short and relatively broad, with small 2 teeth near acute apex (Roháček, 2006: fig. 232); tooth of pregonite relatively robust (Roháček, 2006: fig. 231); saccus of distiphallus long, with only a few spines; female sternite 7 separate, small and simple (Fig. 24); female genital chamber with internal sclerotization formed by 3 separate pairs of flat short curved sclerites (Roháček, 2006: figs 237, 238) and spermathecae ovoid (Roháček, 2006: fig. 241).... **An. pallida Zetterstedt**
16. Occiput dorsomedially behind postvertical setae blackish brown with brown-grey microtomentose; male hind femora simply setulose posteroventrally..... 17
Occiput dorsomedially behind postvertical setae with a pair of whitish grey microtomentose stripes (cf. Roháček, 2020: fig. 5); male hind femora with shortened and thickened posteroventral setae 18
17. Female tergosternum 7 with small anteromedial pale-pigmented area in dorsal view (Roháček, 2020: fig. 50) and original sternite 7 larger (although membranous), subtriangular and more setose in ventral view (Roháček, 2020: fig. 51); male unknown **An. elongata Roháček**
Female tergosternum 7 with a narrow posteromedial incision in dorsal view (Roháček, 2006: fig. 412) and with large, pale pigmented, elongately trapezoidal area in ventral view (Roháček, 2006: fig. 415); male genitalia: filum of distiphallus slender, with single attenuated and acutely pointed apex (Roháček, 2006: fig. 409); gonostylus long, narrow, acute apically (Roháček, 2006: figs 404, 405, 411); caudal process of transandrium with long, rectangular, spinose and serrate appendage (Roháček, 2006: figs 406–408) **An. elbergi Andersson**
18. Gonostylus broad, suboblong, with posteroventral corner slightly projecting (Roháček, 2006: fig. 387); female tergosternum 7 without flat anterior appendages in ventral view (Roháček, 2006: fig. 396); female genital chamber with sclerites strongly asymmetrical (Roháček, 2006: figs 391, 392) and spermathecae with terminal invagination short (Roháček, 2006: fig. 395)..... 19
Gonostylus slender, cuneiform (Roháček, 1987: fig. 4); female tergosternum 7 ventromedially having a pair of small flat anterior appendages tucked under posterior margin of sternite 6 (Roháček, 1987: fig. 11); female genital chamber with sclerites more symmetrical (Roháček, 1987: fig. 11) and spermathecae with terminal invagination long (Roháček, 1987: fig. 72) **An. cuneata Roháček**
19. Fore femora with ctenidial spine only slightly shorter than maximum width of fore tibiae; male hind femora with 2–4 thickened posteroventral setae in apical third; gonostylus broader, with posterior outline distinctly convex and with posteroventral corner blunt (Roháček, 2020: figs 7, 10); filum of distiphallus much broader in the middle, with only 2 main projections on apex (Roháček, 2020: figs 13, 14); female tergite 6 with distinctive posterior transverse, bare and pale medial area; female tergosternum 7 entirely blackish brown dorsally **An. robusta Roháček**
Fore femora with ctenidial spine very short, only half length of maximum width of fore tibiae; hind femora with 6–7 thickened posteroventral setae in apical third; gonostylus (Roháček, 2006: figs 385, 387) narrower, parallel-sided, with posteroventral corner acute-angled; filum of distiphallus huge, with 3 long and robust projections on apex (Roháček, 2006: figs 389, 390); female tergite 6 without posterior transverse, bare and pale medial area, tergosternum 7 with blackish brown dorsal pigmentation restricted to short transverse band (medially often paler) being enlarged laterally (Roháček, 2006: fig. 394) **An. trifurca Sueyoshi & Roháček**

3.2 Taxonomy

Genus *Anthomyza* Fallén, 1810

Anthomyza Fallén, 1810: 20 [feminine]; Czerny, 1902: 250; 1928: 2; Becker, 1905: 230 (catalog); Séguy, 1934: 301 (key); Collin, 1944: 265 (key); Frey, 1958: 32 (key); Trojan, 1962: 37; Sabrosky, 1965: 819 (catalog); Doskočil, 1977: 257 (key); Vockeroth, 1977 (catalog); Soós, 1981: 109; Andersson, 1984b: 50 (catalog); Vockeroth, 1987: 890 (key); Roháček & Freidberg, 1993: 64 (key); Roháček 1998a: 172 (world checklist); 1998b: 276 (key); Roháček, 2006: 86 (key); Roháček, 2009: 27 (key). Type species: *Anthomyza gracilis* Fallén, 1823: 8 (designated by Westwood, 1840: 152).

Leptomyza Macquart, 1835: 580 [feminine] (unnecessary new name for *Anthomyza* Fallén, 1810 assumed preoccupied by *Anthomyia* Meigen, 1830); Schiner, 1864: 281. Type species: *Anthomyza gracilis* Fallén, 1823: 8 (designated by Coquillett, 1910: 560).

Anthophilina Zetterstedt, 1837: 55 [feminine] (unnecessary new name for *Anthomyza* Fallén, 1810 assumed preoccupied by *Anthomyia* Meigen, 1803); Rondani, 1875: 186. Type species: *Anthomyza gracilis* Fallén, 1823: 8 (by monotypy).

Description (Roháček, 2006, 2009). Frons mostly dull, frontal triangle moderate or narrow, reaching to anterior half to third of frons; arista shortly ciliate or very densely haired to distinctly plumose; 2–3 fronto-orbital setae developed. Mesonotum with 1 distinct presutural seta, 2–3 dorsocentral setae and acrostichal microsetae in 4 (rarely 2) rows on suture. Legs mostly yellow, often with dark apical tarsal segments, rarely with femora somewhat darkened; fore femora with a ctenidial spine. Wing unicolourous, at most darkened at anterior margin; cross-vein r-m situated slightly proximal to or at middle of dm cell. Male genitalia: Epandrium moderate, as wide as high to strongly wider than high, with 1–2 pairs of longer



Figures 1–5. *Anthomyza elbergi* Andersson, 1976, male. 1. Habitus, lateral view; 2–3. Head, anterior and lateral view; 4. Thorax, dorsal view; 5. Male genitalia, lateral view.

setae; hypandrium relatively robust, symmetrical and well sclerotized, with anterior inner lobes more or less developed; transandrium of various form, without or with (sometimes extremely robust) caudal process; pregonite fused with hypandrium, often with 1 ventrally projecting lobe and with 2 (anterior and posterior) groups of setae; postgonite slender, strap-like, with 1 anterior or lateral setula, usually in proximal half; aedeagus with short and rather simple phallosome; distiphallus composed of largely membranous saccus and usually long and more sclerotized filum; filum sclerotized, formed by single sclerite, most often slender and distally attenuated and paler-pigmented but its apex may be secondarily widened and armed by various teeth or projections; aedeagal part of folding apparatus with various structures externally and internally, usually spinose or tuberculate and striated; connecting sclerite usually distinct, rarely membranous; basal membrane usually densely spinose, unarmed when caudal process enlarged. Female abdominal tergite 8 usually narrow, elongate, sometimes strongly tapered posteriorly; sternite 8 longitudinally divided, in 2 often elongate sclerites, having posterior part more or less bent dorsally and recurved internally; genital chamber with single to 3 pairs of internal sclerites (often fused together, rarely asymmetrical) and with one curved and usually elongate (never transverse) annular sclerite; ventral receptacle very long, tubular and hyaline, with apex slender and curved, vermicular or helicoid; spermathecae (1+1) on long or very long ducts, subspherical to elongate pyriform, usually with transversely ringed surface and minute spinulae, often also with terminal invagination.

Remarks. The genus *Anthomyza* includes 43 species worldwide, of which 9 species are recorded in China. Roháček (2006, 2009) assembled part of them into 8 species groups. This genus is mainly distributed in the Palearctic and Nearctic Regions, rarely Oriental and Neotropical Regions, but none in the Afrotropical or Australian Regions so far.

***Anthomyza elbergi* Andersson, 1976 (Figs 1–15)**

Anthomyza elbergi Andersson, 1976: 47, 1984b: 53 (catalog); Roháček, 1984: 393 (key), 1998a: 173 (world checklist); Sueyoshi & Roháček, 2003: 25, 34 (key); Roháček, 2006: 185 (redescription); Kahanpää, 2014: 286; Roháček & Przhiboro, 2016: 208; Roháček, 2018: 75.

Anthomyza sordidella: Czerny, 1928: 5 (partim); Trojan, 1962: 40 (partim); Elberg, 1968: 630, 631 (genit.); Stackelberg, 1970: 326 (key).

Description. Head, mesonotum and abdomen mostly dark brown (Figs 1, 4, 6, 10–13). Frons (Figs 2, 7, 9) yellow in anterior half (also in front of frontal triangle). Antennal 1st flagellomere flattened laterally with short white pilosity on anteroventral margin, arista blackish brown including basal segment, shortly ciliate (Figs 3, 8). Legs yellow to darker yellow, particularly femora ochreous or only hind femora ochreous-brown tinge; tarsus 5 (Figs 1, 6) dark brown completely and tarsus 4 partly or paler brown. Male genitalia (Fig. 5): Epandrium with 3 dorsomedial pairs of longer and thicker setae, almost in a horizontal line in posterior view (Roháček, 2006: fig. 404); gonostylus long, slender and acute apically; caudal process of transandrium with long, rectangular, spinose and serrate appendage. Female tergosternum 7 with a large, pale pigmented, elongately trapezoidal area in ventral view (Fig. 14); spermathecae (Fig. 15) irregularly oval.

Material examined. 13♂7♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Guoluotuoniyaji River, wetland, 30.VII.2015, sample I–IV, Li Shi, Rongrong Shen, Ying Chen, Ayingge; 1♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Guoluotuoniyaji River, shrubs, 30.VII.2015, sample II, Li Shi; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Guoluotuoniyaji River, shrubs, 22.VII.2017, sample III, Shunde Li; 5♂3♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jiuhe station, wetland, 7–24.VII.2015, sample III–IV, Ayingge, Rongrong Shen; 2♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jiuhe station, shrubs, 8–16.VII.2017, sample I–III, Shunde Li; 1♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Wuzhiercha, wetland, 8.VII.2016, sample II, Li Shi; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jinamijima River, shrubs, VII.2017, sample IV, Rongrong Shen.

Distribution. China (Inner Mongolia), Czech Republic, Estonia, Germany, Ireland, Japan, Latvia, Lithuania, North Korea, Norway, Poland, Russia, Sweden, United Kingdom of Great Britain and Northern Ireland.

Remarks. The species is reported in China for the first time.

***Anthomyza pallida* (Zetterstedt, 1838) (Figs 16–24)**

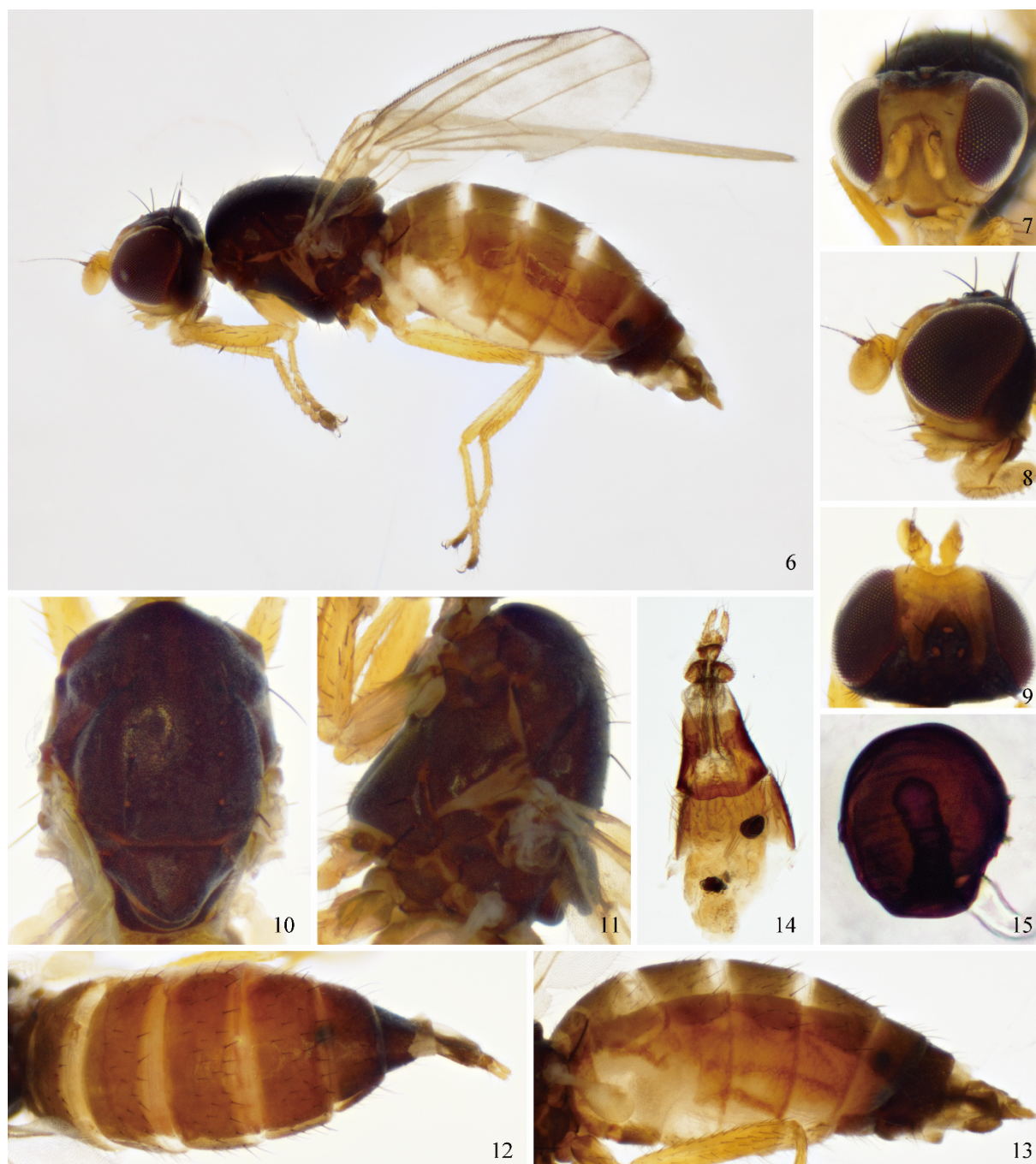
Anthophilina pallida Zetterstedt, 1838: 785, 1848: 2702.

Anthomyza pallida: Czerny, 1902: 251, 1928: 4; Ségué, 1934: 303; Trojan, 1962: 38; Soós, 1981: 110; Andersson, 1984a: 17, 1984b: 52; Roháček, 1998a: 173; Roháček, 2006: 110; Roháček, 2009: 38.

Sapromyza unguicella Zetterstedt, 1838: 753; Andersson, 1984a: 17.

Geomyza unguicella: Zetterstedt, 1847: 2530.

Anthomyza unguicella: Collin, 1944: 270; Stackelberg, 1970: 329.



Figures 6–15. *Anthomyza elbergi* Andersson, 1976, female. 6. Habitus, lateral view. 7–9. Head, anterior, lateral and dorsal view; 10–11. Thorax, dorsal and lateral view; 12–13. Abdomen dorsal and lateral view; 14. Postabdomen, ventrally; 15. Spermathecae.

Description. Body mostly yellow (Figs 16, 20). Arista shortly ciliate (Figs 17, 22). Mesonotum with brown vittae, rich and darker in male (Fig. 18) than female (Fig. 23); 2 brown middle vittae (on acrostichal microsetae) and 2 lateral vittae (each between dorsocentral setae and supraalar setae, or on presutural setae, surpaalar setae and postalar setae) extending from anterior margin of mesonotum to apex of scutellum in male (middle vittae less visible and lateral vittae narrower in female); humeral callus at least partly brown. Tarsus 5 (Figs 16, 20) dark brown at least in distal half. Abdominal tergites yellowish brown to dark brown in male (Fig. 16) (completely yellow except for brown at middle of tergite 1 and anterior margin of tergite 2 in female (Fig. 20)). Male genitalia (Fig. 19): Epandrium with 3 dorsomedial pairs of longer and thicker setae in posterior view, gonostylus tapered apically and bent medially with 3 teeth on apex (Roháček, 2006: fig. 228). Female abdominal tergite 8 anteriorly tapered and deeply emarginate in dorsal view (Roháček, 2006: fig. 235), tergite 7 expanded onto ventral side but not fused with sternite 7 (Fig. 24), sternite 7 small and narrow, wider posteriorly and finely setose

(Roháček, 2006: fig. 240).

Material examined. 2♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, streams path near central station about 200m, 24.VII.2015, sample II, Li Shi; 1♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jinamijima River, forest, 9.VII.2017, sample III, Shunde Li; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Wuzhiercha, forest, Malaise trap (No.5), 977 m, 30.IX.2016, Rongrong Shen; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jinamijima River, shrubs, sample IV, 22.VII.2017, Rongrong Shen; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Bonuo River, wetland, sample I, 22.VII.2017, Shunde Li.

Distribution. China (Inner Mongolia), Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Italy, Kirghizia, Latvia, Mongolia, Netherlands, Norway, Poland, Russia, Scotland, Slovakia, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland.

Remarks. The species is reported in China for the first time.



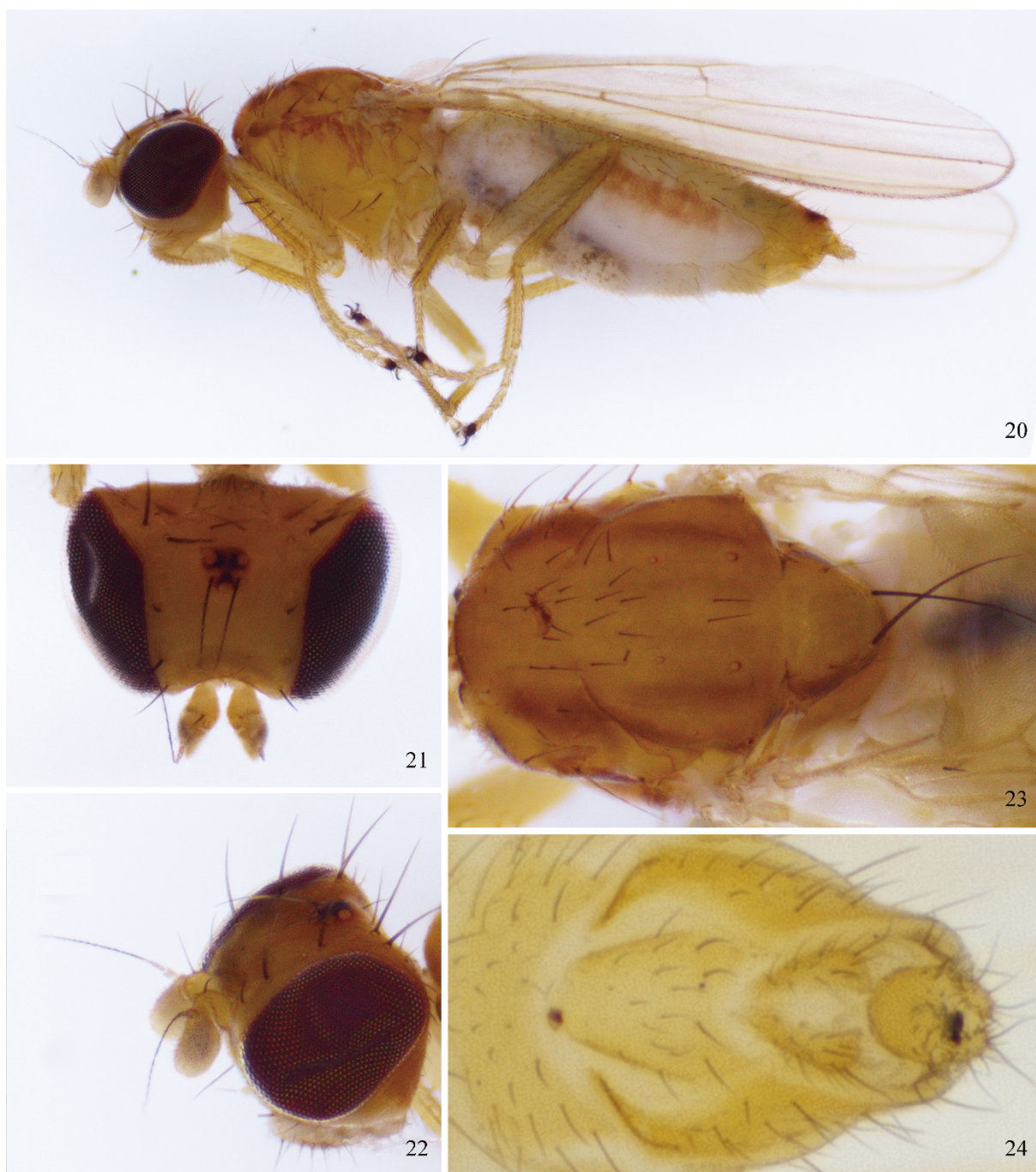
Figures 16–19. *Anthomyza pallida* (Zetterstedt, 1838), male. 16. Habitus, dorsal view; 17. Head, dorsal view; 18. Thorax, dorsal view; 19. Male genitalia, lateral view.

Genus *Stiphrosoma* Czerny, 1928

Stiphrosoma Czerny, 1928: 6 [neuter]; Frey, 1958: 31 (key); Trojan, 1962: 35; Soós, 1981: 114; Roháček & Freidberg, 1993: 63 (key); Roháček, 1996: 90 (redescription); Roháček 1998b: 275 (key); Roháček & Barber, 2005: 5 (redefinition). Type species: *Stiphrosoma oldenbergi* Czerny, 1928: 6 (designated by Enderlein 1936: 167, by elimination) = *S. sabulosum* (Haliday, 1837).
Striphosoma: Séguéy, 1934: 301, 304 (incorrect subsequent spelling).

Ptenotaenia Enderlein, 1936: 167 [feminine]. Type species: *Opomyza* (*Geomyza*) *sabulosa* Haliday, 1837: 151 (monotypy).

Description (Roháček, 2006, 2009). Frons relatively wide, frontal triangle more or less distinct; occiput medially with a pair of convergent silvery white microtomentose stripes above foramen; antennal 1st flagellomere laterally compressed; arista distinctly pectinate; 2 long fronto-orbital setae. Mesonotum with 1 small presutural seta or reduced to microseta (rarely presutural seta as long as supraalar), 1 short supraalar seta, 1 longer postalar seta, 2 long postsutural dorsocentral setae; acrostichal microsetae in 4–6 rows. Legs usually yellow, often with brown apical tarsal segment, rarely also femora and tibiae brown; fore femora having or lacking a ctenidial spine. Wing unicolourous, relatively short and narrow, sometimes greatly reduced with modified venation; cell dm relatively short and narrow; cross-vein r-m situated in proximal third to two-fifths of dm cell, rarely dm-cu absent. Male genitalia: epandrium relatively broad, always wider than long, moderately



Figures 20–24. *Anthomyza pallida* (Zetterstedt, 1838), female. 20. Habitus, lateral view; 21–22. Head, dorsal and lateral view; 23. Thorax, dorsal view; 24. Postmen, ventral view.

to densely setose, with 1–3 pairs of longer setae; hypandrium without anterior dorsally projecting flat internal lobes; transandrium simple, transverse, without caudal process, ventrally with only basal membrane; pregonite small, inconspicuous, fused to hypandrium, setulose; postgonite medium sized, usually slender, slightly bent to S-shaped, with 1 seta; aedeagus with small framed phallophore connected by ventral band-like sclerites with distiphallus; distiphallus composed of voluminous membranous saccus and slender sclerotized filum; filum formed by 2 longitudinal band-like, more or less fused sclerites and its unpigmented apex terminated in various sharp processes, teeth, spinulae and/or setulae; aedeagal part of folding apparatus with well-developed connecting sclerite and its external wall provided with various sculpturing (dense spine-like or tuberculiform excrescences). Female abdominal tergite 8 plate-shaped, of variable shape and pigmentation, sparsely setulose; sternite 8 short, transverse, with a posteromedial cleft, or medially membranous to divided; internal sclerotization of genital chamber formed by 1 to 3 pairs of crooked and partly fused posterior sclerites and 1 anterior very narrow and very transversely looped sclerite; spermathecae (1+1) shortly to elongately pyriform, with surface covered by dark curved spines which may be transversely attached to surface and carrying minute pale globulae.

Remarks. The genus *Stiphrosoma* includes 8 species worldwide, all from the Palearctic and Nearctic Regions. It is reported in China for the first time.

***Stiphrosoma humerale* Roháček & Barber, 2005 (Figs 25–28)**

Stiphrosoma humerale Roháček & Barber, 2005: 89; Roháček, 2006: 287; Roháček, 2009: 102.



Figures 25–28. *Stiphrosoma humerale* Roháček & Barber, 2005. 25. Habitus of female, lateral view; 26. Spermathecae of female; 27. Habitus of male, lateral view; 28. Male genitalia, lateral view.

Description. Head (Figs 25, 27) mostly yellow except for dark brown frontal triangle, and most of occiput and mesonotum brown to dark brown except for whitish yellow humerus and yellow notopleuron, abdomen brown (Figs 25, 27). Antennal 1st flagellomere with long white cilia on apex and arista shortly pectinate. Fore femora (Figs 25, 27) with a ctenidial spine being markedly longer than maximum width of tibiae. Anepisternum with a brown transverse stripe on upper margin (Figs 25, 27). Male genitalia (Fig. 28): epandrium with 2 dorsomedial pairs of longer and thicker setae in posterior view, gonostylus short and markedly broad, particularly in apical third in lateral view (Roháček, 2006: figs 608–609); pregonite with numerous longer and thicker setae (Roháček, 2006: fig. 610); filum of distiphallus curved apex with shape like a triangle (Roháček, 2006: fig. 613). Female tergosternum 7 dorsally short and dark but dorsomedially divided (Roháček, 2006: fig. 618); internal structures of genital chamber (Roháček, 2006: figs 617, 619) complex and well sclerotized, with 3 pairs of partly fused sclerites; spermathecae (Fig. 26) with spines transversely attached to surface denser (Roháček, 2006: fig. 616).

Material examined. 1♂ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Niuer Lake, shrubs, 5.VII.2017, Shunde Li; 1♀ (IMAU), China, Inner Mongolia, Hulunbeir, Genhe City, Hanma National Nature Reserve, Jinamijima River, wetland, 28.VII.2016, Sample II, Li Shi.

Distribution. China (Inner Mongolia), Czech Republic, Latvia, North Korea, Russia, USA, Canada.

Remarks. The species is reported in China for the first time.

3.3 A checklist of known genera and species of the family Anthomyzidae in China

Genus *Amygdalops* Lamb, 1914

Amygdalops bisinus Roháček, 2008. Oriental: China (Hainan), Thailand, Vietnam.

Amygdalops curtisi Roháček, 2008. Oriental: China (Taiwan), Thailand.

Amygdalops cuspidatus Roháček, 2008. Oriental: China (Taiwan).

Amygdalops nigrinotum Sueyoshi & Roháček, 2003. Palaearctic: Japan (Izu, Ogasawara, Ryukyu Islands). Oriental: India, Indonesia, Japan (Okinawa), Philippines, China (Taiwan), Thailand. Australian/Oceanian: Australia, USA (Hawaii). Afrotropical: Seychelles.

Amygdalops sevciki Roháček, 2018. Oriental: China (Hainan), Thailand, Indonesia.

Genus *Anthomyza* Fallén, 1810

Anthomyza caesarea Roháček, 2020. Oriental: China (Taiwan).

Anthomyza cuneata Roháček, 1987. Oriental: China (Sichuan), Nepal.

Anthomyza elongata Roháček, 2020. Oriental: China (Taiwan).

Anthomyza elbergi Andersson, 1976. Palaearctic: China (Inner Mongolia), Czech Republic, Estonia, Germany, Ireland, Japan, Latvia, Lithuania, North Korea, Norway, Poland, Russia, Sweden, United Kingdom of Great Britain and Northern Ireland.

Anthomyza ornata Roháček, 2018. Oriental: China (Sichuan).

Anthomyza pallida Zetterstedt, 1838. Palaearctic: China (Inner Mongolia), Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Italy, Kirghizia, Latvia, Mongolia, Netherlands, Norway, Poland, Russia, Scotland, Slovakia, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland.

Anthomyza robusta Roháček, 2020. Oriental: China (Taiwan).

Anthomyza sulphurea Roháček, 2018. Oriental: China (Yunnan).

Anthomyza trifurca Sueyoshi & Roháček, 2003. Palaearctic: Japan, North Korea, South Korea, and East and South of Palaearctic area. Oriental: China (Sichuan)

Genus *Arganthomyza* Roháček, 2009

Arganthomyza hyperseta Roháček, 2018. Oriental: China (Shaanxi).

Arganthomyza versitheca Roháček, 2009. Palaearctic: South Korea. Oriental: China (Shaanxi, Sichuan).

Genus *Epischnomyia* Roháček, 2006

Epischnomyia merzi Roháček, 2009. Palaearctic: South Korea. Oriental: China (Sichuan).

Epischnomyia tkoci Roháček, 2018. Oriental: China (Sichuan).

Genus *Marshallya* Roháček, 2018

Marshallya platythorax Roháček, 2018. Oriental: China (Sichuan).

Genus *Stiphrosoma* Czerny, 1928

Stiphrosoma humerale Roháček & Barber, 2005. Palearctic: China (Inner Mongolia), Czech Republic, Latvia, North Korea, Russia. Nearctic: America, Canada.

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