

## New species of fast-running flies (Diptera: Empidoidea, Hybotidae, Tachydromiinae) from mangroves in Singapore

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**Abstract.** An intensive two-year sampling campaign in four mangroves in Singapore revealed the presence of eight hybotid species new to science. They are described and illustrated: *Elaphropeza albicornis*, new species, *E. bakau*, new species, *E. chanooides*, new species, *E. lowioides*, new species, *E. melanuroides*, new species, *E. obscura*, new species and *E. pallida*, new species and *Stilpon ubinensis*, new species. Males are reported and described for the first time for *E. asexu* Shamshev & Grootaert, 2007 and *E. singulata* Shamshev & Grootaert, 2007. The female of *E. kranjiensis* Grootaert & Shamshev, 2013 is also reported for the first time.

**Key words.** Hybotidae, new species, mangroves, Singapore, Oriental region

### INTRODUCTION

The fly family Hybotidae has many species that adapted to mangrove conditions as was shown by Grootaert & Shamshev (2012) in a review of the Tachydromiinae of Singapore and adjacent region. A part of that study was based on a one-month survey in spring 2009 in fourteen mangroves all around the island of Singapore. The present study is based on a two-year long weekly sampling campaign from April 2012 till the end of March 2014 in four mangroves sites along the coast of Singapore. A total of 7,479 hybotid specimens were collected belonging to 56 species. During this study we found eight species new to science. Seven species belong to *Elaphropeza*, Macquart and one species to *Stilpon*, Loew.

The Hybotidae in Singapore was subject of several taxonomic studies. There was the revision of the diverse genus *Elaphropeza* with the description of 51 new species (Shamshev & Grootaert, 2007). It was followed by the review of the subfamily Tachydromiinae with 85 species belonging to nine genera (Grootaert & Shamshev, 2012). Remaining groups of Hybotidae are poorly represented. There are two unidentified species of *Hybos*, Meigen and two *Syndyas*, Loew species (Grootaert & Yang, 2009). In the present study, we raise the number of Tachydromiinae for Singapore to 93 species.

### MATERIAL AND METHODS

The present study is based on a survey commissioned by the National Parks (NParks) of Singapore to assess the insect diversity in mangroves in Singapore. This project called MIP (Mangrove Insect Project) was a two-year in-depth study of four mangrove sites (Table 1). Per site, 2 or 3 Malaise traps were operated and samples were retrieved weekly from April 2012 till the end of March 2014. Each sample received a register number (e.g., reg. 29418). So, that number corresponds to a sample taken at a precise date, station (Malaise trap) and site.

The samples were stored in 70% ethanol and kept in a deepfreeze (–18°C) before and after sorting. Identified specimens were eventually stored in a fridge (4°C).

All holotypes and paratypes are stored in the Lee Kong Chian Natural History Museum (formerly Raffles Museum of Biodiversity Research), NUS, Singapore. Most specimens are stored per species and per record in glass tubes in trays. The position of the tube in the tray that is at the same time the reference of the record, is registered under the form of a 4 digit number (e.g., Ma0827). Each record should be quoted as coll. J. Puniamoorthy & P. Grootaert.

The terminology and descriptive format used in the descriptions follow Grootaert & Shamshev (2012). To facilitate observations, the terminalia were macerated in cold 10% KOH and hot 85% lactic acid and immersed in glycerine. Drawings of morphological features were made with a camera lucida attached to a compound microscope. In descriptions, the right and left side of the male terminalia are based on the unrotated position viewed posteriorly, such that in the illustrations the right surstylus appears on the reader's left side and vice versa. Male terminalia are figured in their unrotated position.

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Table 1. Sampling stations with coordinates (provided by Jayanthi Puniamoorthy)

Trap ID	Location	GPS Coordinates	Mangrove Habitat
SB1	Sungei Buloh	01° 26.773' N, 103° 43.840' E	back mangrove
SB2	Sungei Buloh	01° 26.784' N, 103° 43.842' E	back mangrove
SMN1	Semakau New (replanted)	01° 12.058' N, 103° 45.761' E	front mangrove
SMN2	Semakau New (replanted)	01° 12.092' N, 103° 45.765' E	front mangrove
SMN3	Semakau New (replanted)	01° 12.130' N, 103° 45.778' E	front mangrove
SMO1	Semakau Old (original)	01° 12.294' N, 103° 45.633' E	front mangrove
SMO2	Semakau Old (original)	01° 12.327' N, 103° 45.592' E	back mangrove
SMO3	Semakau Old (original)	01° 12.420' N, 103° 45.645' E	front mangrove
PU1	Pulau Ubin, Chek Jawa	01° 24.479' N, 103° 59.222' E	back mangrove
PU2	Pulau Ubin, Chek Jawa	01° 24.395' N, 103° 59.209' E	back mangrove
PU3	Pulau Ubin, Chek Jawa	01° 24.359' N, 103° 59.251' E	back mangrove
PU4	Pulau Ubin, Chek Jawa	01° 24.631' N, 103° 59.408' E	back mangrove

Images were made with a Canon EOS 600D camera and stacked with Zerene stacker as described in Brecko et al. (2014). The scale bar on the photos represents 1 mm, on the drawings 0.1 mm. Abbreviations: lc: left cercus; ls: left surstylus; rel: right epandrial lamella, lel: left epandrial lamella.

## TAXONOMY

### Family Hybotidae Macquart, 1827

### Subfamily Tachydromiinae Meigen, 1822

### Genus *Elaphropeza* Macquart, 1827

*Elaphropeza* Macquart, 1827: 86 (as genus). Type-species: *Tachydromia ephippiata* Fallén, 1815: 11, by monotypy.

*Ctenodrapetis* Bezzi, 1904: 351 (as subgenus of *Drapetis*). Type-species: *Ctenodrapetis ciliatocosta* Bezzi, by subsequent designation of Melander (1928: 309).

### *Elaphropeza albicornis*, new species

(Figs. 1–5)

**Material examined.** Holotype male, Singapore, Semakau Island, SMN1, 21 March 2013, mangrove, (reg. 29810, Ma6931). Paratypes: Singapore: Semakau Island, 1 male, SMN2, 22 August 2012, mangrove, (reg. 29418, Ma6802); 1 male, SMN2, 8 November 2012, mangrove, (reg. 29561, Ma6868); 1 male, SMN2, 8 November 2012, mangrove, (reg. 29561, Ma6869); 1 female, SMN2, 18 October 2012, mangrove, (reg. 29522, Ma6922); 1 female, SMN1, 21 March 2013, mangrove, (reg. 29810, Ma6931); 1 female, SMN1, 27 June 2013, mangrove, (reg. 29998, Ma7072); 1 female, SMN2, 7 February 2014, mangrove, (reg. 30415, Ma8781); 1 female, SMN3, 3 October 2013, mangrove, (reg. 30182, Ma8816); 1 male, SMN3, 10 October 2013, mangrove, (reg. 30195, Ma8817); 1 female, SMN2, 20 March 2014, mangrove, (reg. 30443, Ma8920); 1 female, SMN1, 29 August 2013, mangrove, (reg. 30115, Ma8922).

**Etymology.** The epithet refers to the white colour of the postpedicel.

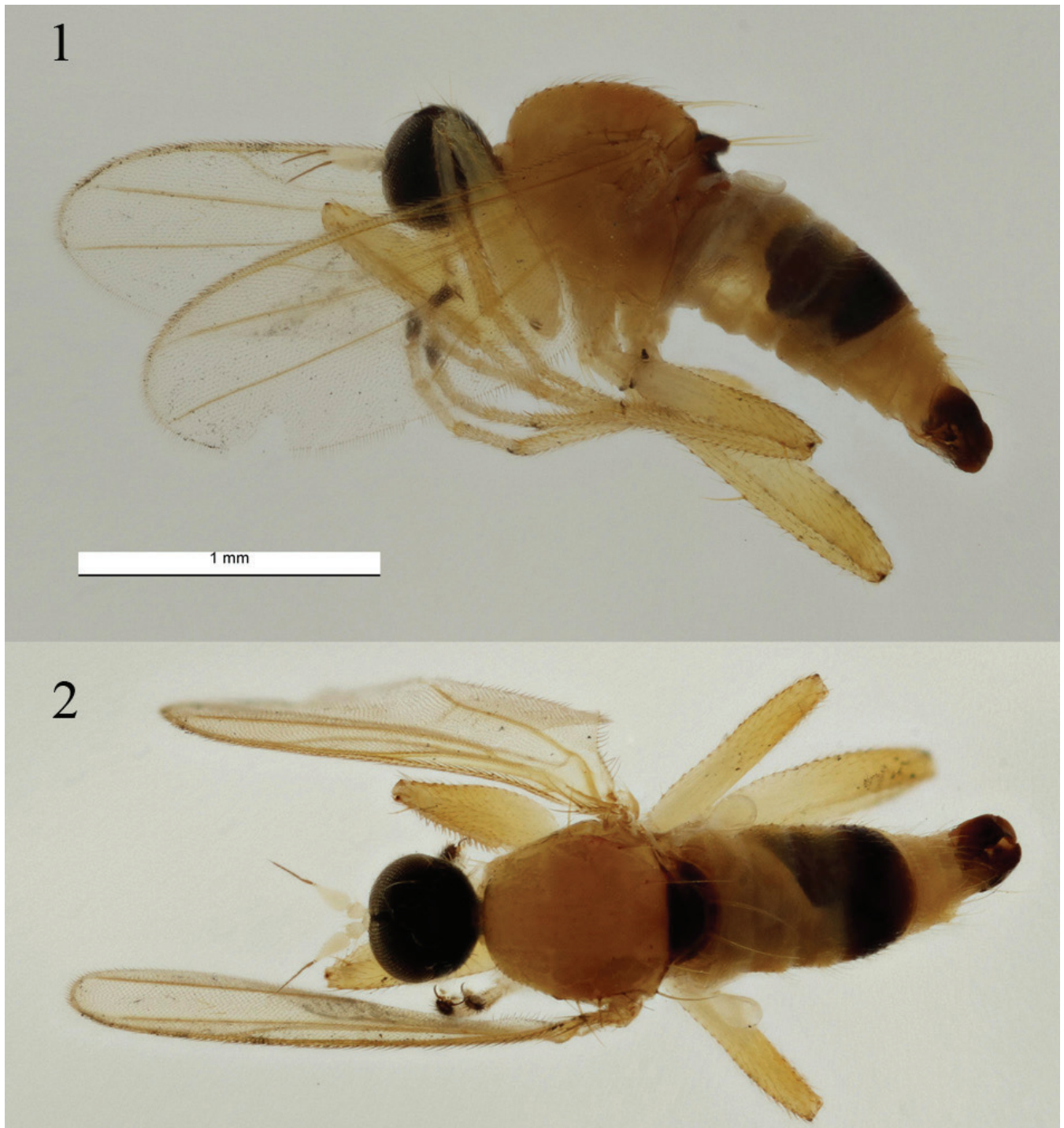
**Diagnosis.** Species of the *E. ephippiata* group; recognised by yellow thorax with scutellum and metanotum brown, antenna pale yellow with stylus brown, legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle, haltere yellow.

**Description.** Length: body 2.3 mm, wing 2.3 mm.

Male: Occiput entirely black, subshining; with yellowish setation; inner verticals long inclinate, outer verticals somewhat shorter inclinate. Anterior ocellars long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna pale yellow but stylus brown; pedicel with circlet of subequally short setulae; postpedicel short, nearly 2.5 times longer than wide; stylus with short pubescence, rather short, nearly 1.5 times longer than postpedicel. Proboscis yellowish. Palpus pale yellow, small, rounded, silvery pubescent, bearing scattered setulae, subapical seta short.

Thorax yellow but scutellum and metanotum entirely brown; prothoracic sclerites, entire mesopleuron and mesonotum on anterior part finely tomentose, otherwise shining, with yellowish setation. Prothoracic episterna lacking long upturned seta just above fore coxa. Postpronotal seta hardly prominent. Mesonotum with 2 long notopleurals, 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair short); acrostichals short, arranged in 4 irregular rows, numerous, hardly separated from dorsocentrals, lacking on prescutellar depression; dorsocentrals multiserial, similar to acrostichals, 1 prescutellar pair very long.

Legs quite robust, almost entirely yellow, only tarsomere 5 of all legs brown. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of minute

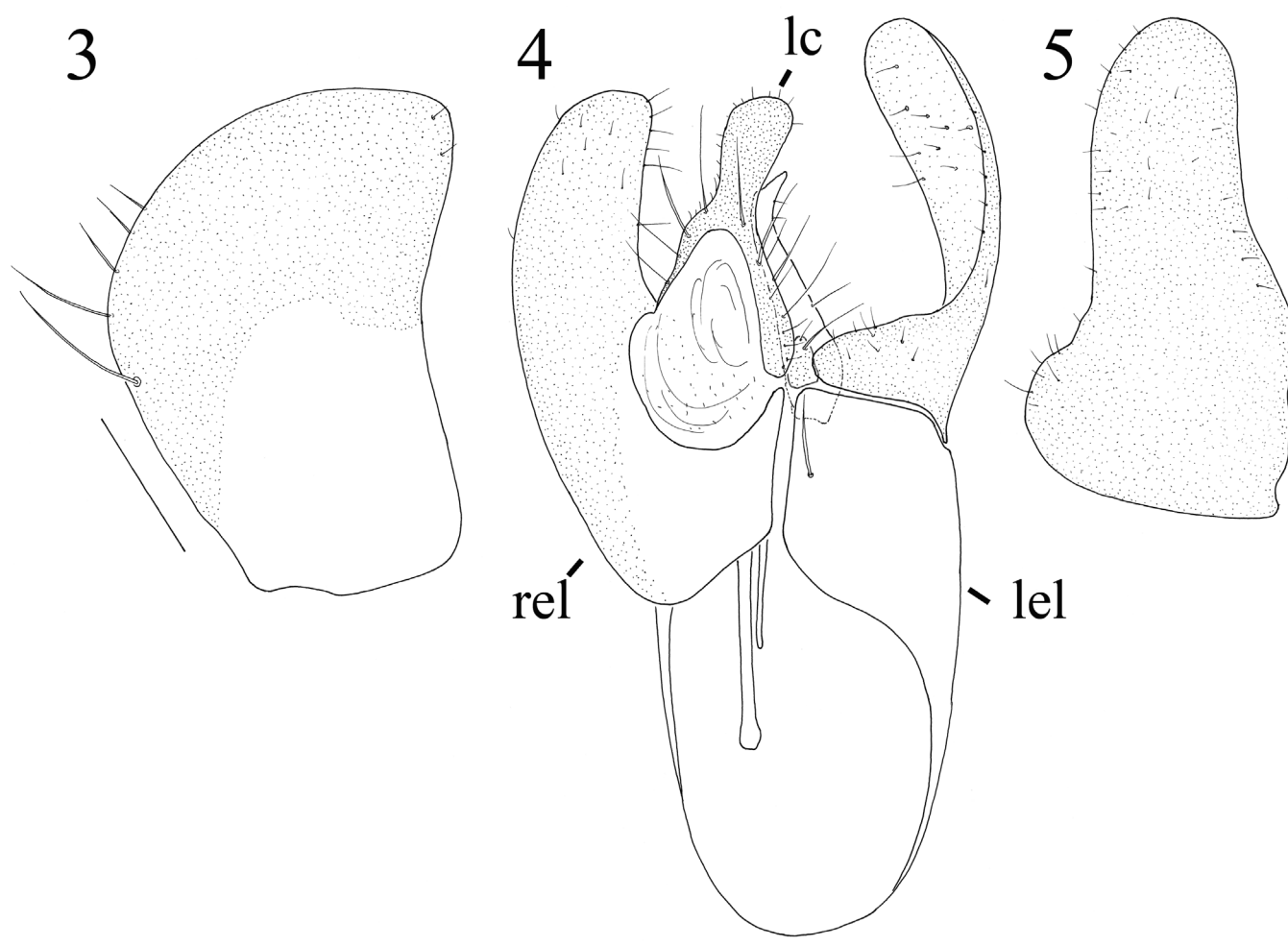


Figs. 1–2. *Elaphropeza albicornis*, new species, male 1, habitus lateral; 2, habitus dorsal.

anteroventral and posteroventral setae, several brownish yellow spinules ventrally just beyond middle, 1 long thin seta near base, 1 subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with row of minute anteroventral and row of longer posteroventral spinule-like setae, 1 long thin seta near base and 1 long strong subapical seta anteriorly. Mid tibia without ventral spinules but bearing 1 ventral subapical black claw-like spine, lacking prominent setae (except subapicals). Hind femur with short anteroventrals and 4 erect dorsal setae near base. Hind tibia with 1 anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins  $bm-cu$  and  $r-m$  pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 44/29/34. Vein  $R_s$  long, slightly longer than crossvein  $bm-cu$ . Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  almost straight,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein  $bm-cu$  perpendicular. Crossvein  $r-m$  before middle of cell  $bm$ . Squama yellow, with long, brownish yellow setae. Haltere pale yellow.





Figs. 3–5. *Elaphropeza albicornis*, new species: 3, right epandrial lamella, lateral view; 4, epandrium with cerci, dorsal view; 5, left surstylus, lateral view. Scale bar = 0.1 mm. lc: left cercus; ls: left surstylus; rel: right epandrial lamella, lel: left epandrial lamella.

Abdomen. Tergite 1 pale yellow (Fig. 1); tergites 2–3 yellowish, subtriangular viewed laterally, divided medially, with unmodified setae; tergite 4 dark brown, shining, broadest, with numerous unmodified setae; tergite 5 very narrow, undivided, brownish yellow, with squamiform setae; tergites 6–7 yellowish, tergite 6 somewhat broader than tergite 5, undivided, with long posteromarginal setae; tergite 7 broad, undivided, with long posteromarginal setae; tergite 8 unmodified. Sternites yellowish, with scattered setulae, sternite 8 with moderately long posteromarginal setae. Gland-like structure present between tergites 4–5, plate-like. Terminalia (Figs. 3–5) rather small, brown except yellow basal part of right epandrial lamella. Right epandrial lamella with only a few longer bristles on side (Fig. 3). Right and left cercus fused to a digitiform extension (Fig. 4). Left epandrial lamella with a single bristle. Left surstylus large, with minute bristles (Fig. 5).

Female: Similar to male. Fore femur without ventral spinules; mid tibia without ventral subapical black spine. Abdominal tergites 6–7 with shorter posteromarginal setae; segment 8 narrow, brownish yellow. Cercus small, yellowish, with scattered short setae.

**Distribution.** Singapore.

**Remarks.** Very similar to *E. bakau*, new species but differing by the brown colour of the scutellum and metanotum. In the latter scutellum and metanotum are yellowish. In the key to *Elaphropeza* of Singapore (Grootaert & Shamshev, 2012) *E. albicornis*, new species runs to the species with black scutellum and acrostichals lacking on prescutellar depression (couplet 79). It has antenna with scape, pedicel and postpedicel pale yellow, stylus brownish. Postpedicel short, nearly 2.5 times as long as wide. *Elaphropeza feminata* Shamshev & Grootaert and *E. semakau* Grootaert & Shamshev have postpedicel brownish apically and longer, 3.5–4.5 times as long as wide.

***Elaphropeza asexualis*, Shamshev & Grootaert, 2007**  
(Figs. 6–11)

*E. asexualis* Shamshev & Grootaert, 2007: 128 (female), fig. 204, Type locality: Singapore, Nee Soon.

**Material examined.** Singapore: Semakau Island, 2 females, SMO2, 17 May 2012, mangrove, (reg. 29239, Ma6783); 1 male, 2 females, SMO2, 7 June 2012, mangrove, (reg. 29278, Ma6784; all barcoded: 1 male reference AB42570224, voucher in box Entomo\_005\_20140417 in position F2; 1 female reference AB42570230, voucher in box Entomo\_005\_20140417 in position F3; 1 female reference



Figs. 6–7. *Elaphropeza asexuata* Shamshev & Grootaert, 2007: 6, habitus male lateral (photo Abdullah Samoh); 7, habitus female dorsal.



Figs. 8–11. *Elaphropeza asexualis* Shamshev & Grootaert, 2007: 8, right epandrial lamella, lateral view; 9, epandrium with cerci, dorsal view; 10, left cercus lateral view; 11, left surstylus, lateral view. Scale bar = 0.1 mm.

AB42570236, voucher in box Entomo\_005\_20140417 in position F4); 1 female, SMO2, 14 June 2012, mangrove, (reg. 29291, Ma6786); 1 male, SMO2, 25 October 2012, mangrove, (reg. 29538, Ma6829); 1 male, SMN3, 6 June 2013, mangrove, (reg. 29961, Ma7045, Fig. 6); 2 males, 1 female, SMN2, 27 July 2013, mangrove, (reg. 29999, Ma7096); 1 female, SMO2, 3 April 2012, mangrove, (reg. 29162, Ma7166); 1 male, 3 females, SMN1, 28 March 2013, mangrove, (reg. 29824, Ma7281); 1 female, SMO2, 14 November 2013, mangrove, (reg. 30242, Ma7586); 2 females, SMO2, 27 December 2012, mangrove, (reg. 29665, Ma7593); 1 female, SMO2, 24 October 2013, mangrove, (reg. 30223, Ma7977); 1 female, SMO2, 31 October 2013, mangrove, (reg. 30226, Ma7981); 1 female, SMO2, 17 October 2013, mangrove, (reg. 30210, Ma7983); 1 female, SMO2, 28 November 2013, mangrove, (reg. 30288, Ma7986); 1 female, SMO2, 14 November 2013, mangrove, (reg. 30262, Ma8874); Sungei Buloh, 1 female, SB1, 8 May 2013, mangrove, (reg. 29903, Ma7314); 2 females, SB1, 16 May 2013, mangrove, (reg. 29926, Ma7317); 3 females, SB1, 29 May 2013, mangrove, (reg. 29942, Ma7320); 2 females, SB1, 3 July 2013, mangrove, (reg. 30007, Ma7335); 1 female, SB1, 24 October 2012, mangrove, (reg. 29530, Ma7375); 1 female, SB1, 23 January 2013, mangrove, (reg. 29699, Ma7414); Pulau Ubin, 1 male, PU1, 16 June 2012, mangrove, (reg. 29293, Ma7429); 1 female, PU1, 23 June 2012, mangrove, (reg. 29306, Ma7442); 1 female, PU4, 3 August 2013, mangrove, (reg. 30071, Ma7464); 1 female, PU1, 1 September 2012, mangrove, (reg. 29436, Ma7503); 1 female, PU1, 6 October 2012, mangrove, (reg. 29501, Ma7519); 1 female, PU1, 17 November 2012, mangrove, (reg. 29579, Ma7530); 1 female, PU1, 26 January 2013, mangrove, (reg. 29709, Ma7543); 1 female, PU4, 27 April

2013, mangrove, (reg. 29889, Ma7649); 1 female, PU4, 1 November 2013, mangrove, (reg. 30240, Ma8063); 1 female, PU4, 16 August 2013, mangrove, (reg. 30096, Ma8893).

**Diagnosis.** Species of the *E. ehippiata* group; recognised by almost entirely yellow thorax with only metanotum brown, antenna with postpedicel about 2.0 times as long as wide, stylus very long, legs yellow, fore tibia with 1 short anterodorsal bristle on about middle, hind tibia with 1 anterodorsal bristle, acrostichals biserial and dorsocentrals uniserial, haltere brownish.

**Description.** Length: wing 2.5 mm.

Male (described for the first time): Occiput entirely black, largely shining; with yellowish setation; inner verticals very long inclinate, outer verticals somewhat shorter, inclinate. Anterior ocellars very long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel (except extreme base) and stylus brownish; pedicel with circlet of subequally short setulae; postpedicel short, nearly 2.0 times longer than wide; stylus with short pubescence, very long, nearly 3.5–4.0 times longer than postpedicel. Proboscis brownish yellow. Palpus pale yellow, small, rounded, silvery pubescent, bearing scattered setulae, subapical seta moderately long.

Thorax almost entirely yellow only metanotum with large subtriangular spot; shining, with yellowish setation. Prothoracic episterna lacking long upturned seta just above fore coxa. Postpronotal well prominent, long, inclinate. Mesonotum with 2 long notopleurals (accompanied by 2



somewhat shorter and thinner setae), 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); acrostichals short, arranged in 2 broad rows, sparse (5–6 in row), lacking on prescutellar depression; dorsocentrals uniserial, sparse (about 8 in row), 2 prescutellar pairs long.

Legs long, slender, yellow, tarsomere 5 of all legs somewhat darker. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of anteroventral and posteroventral short setae, 1 long thin seta near base and 1 subapical strong seta anteriorly. Fore tibia with 1 short anterodorsal bristle on about middle. Mid femur with ventral short spinule-like setae more numerous on basal part, 1 long thin seta near base and 1 long strong subapical seta anteriorly. Mid tibia without ventral spinules, lacking prominent setae (except subapicals). Hind femur with moderately long anteroventrals and 4 erect dorsal setae near base. Hind tibia with 1 long anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale,  $R_{2+3}$ ,  $R_{4+5}$ , apical section of  $M_{1+2}$  and entire  $CuA_1$  brown. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 59/29/43. Vein  $R_s$  long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  quite distinct. Crossvein bm-cu slightly oblique. Crossvein r-m somewhat before middle of cell bm. Squama brownish yellow, with long, brownish yellow setae. Haltere brownish.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish yellow, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, shining, broadest, with numerous squamiform setae; tergite 5 very narrow, with some slightly flattened setae; tergites 6 wider than tergite 5, undivided, with short unmodified setae; tergite 7 broad, with long posteromarginal setae; tergite 8 unmodified. Sternites yellowish, with scattered minute setae, sternite 8 with long posteromarginal setae. Gland-like structure present between tergites 4–5. Terminalia (Figs. 8–11) moderately large, yellow. Right epandrial lamella densely set with bristles, surstylus fused with lamella (Fig. 8). Left cercus very large with long black subapical bristles on right side (Fig. 9), dorsally with a subapical extension set with short spine-like bristles (Fig. 10). Left epandrial lamella with several long bristles (Fig. 9). Left surstylus covered with hair-like bristles (Fig. 11).

Female: See original description.

**Distribution.** Singapore.

**Remarks.** *Elaphropeza asexu* was described from a large number of females found in a mix of terrestrial forests and mangroves. The holotype was designated from a female found

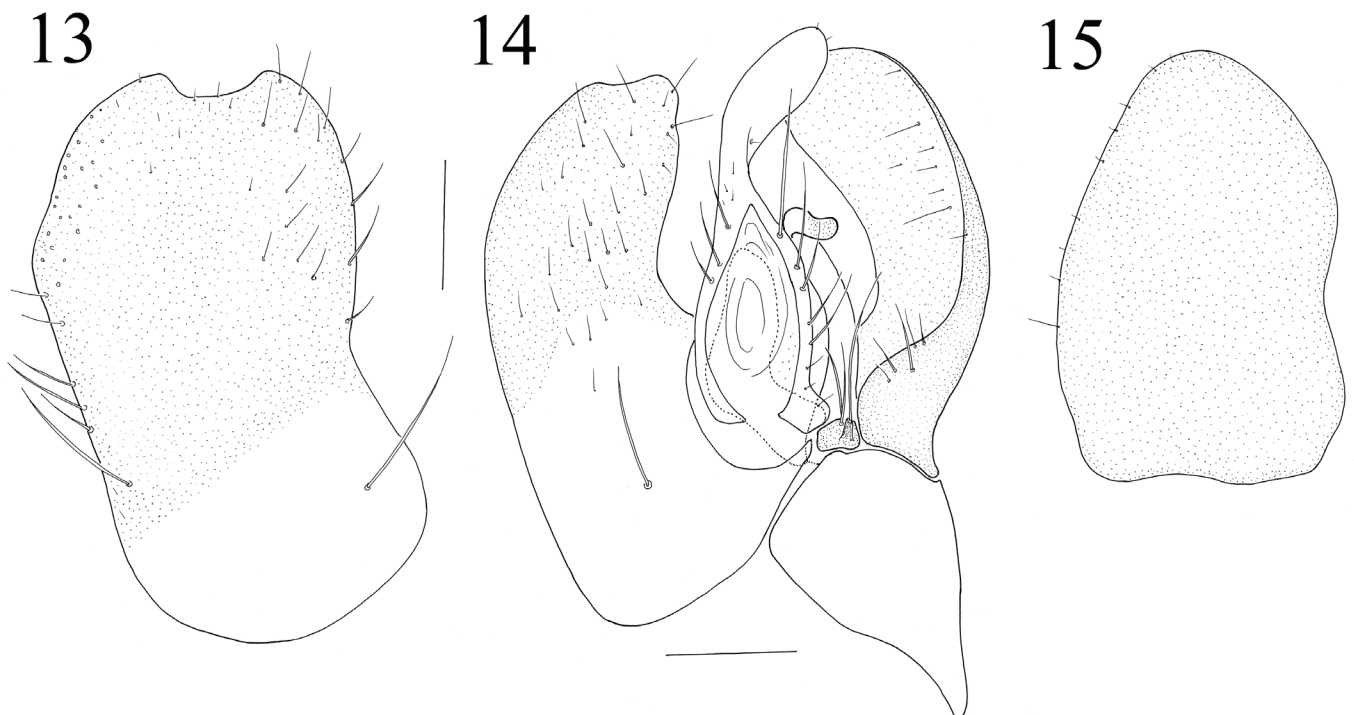
in a swamp forest at Nee Soon and there were more records from terrestrial forests such as primary forest at Bukit Timah and Sime forest. The original description included nineteen females recorded from mangroves on Pulau Ubin. During our recent mangrove survey 7 males were recorded and 37 females. Since we do not have fresh terrestrial material for a genetic analysis we are not sure that the terrestrial specimens are conspecific with the mangrove specimens.

### *Elaphropeza bakau*, new species (Figs. 12–15)

**Material examined.** Holotype male: Singapore, Semakau Island, SMN3, 19 April 2012, mangrove, (reg. 29185, Ma0828). Paratypes: Singapore: Semakau Island, 1 male, 2 females, SMN1, 7 June 2012, mangrove, (reg. 29274, Ma6776); 2 females, SMN3, 28 June 2012, mangrove, (reg. 29315, Ma6781); 2 males, 1 female, SMN2, 22 August 2012, mangrove, (reg. 29418, Ma6803); 1 male, 1 female, SMN2, 30 August 2012, mangrove, (reg. 29431, Ma6805); 1 male, 1 female, SMN2, 30 September 2012, mangrove, (reg. 29470, Ma6810); 1 male, 1 female, SMN3, 13 September 2012, mangrove, (reg. 29458, Ma6820); 1 female, SMN3, 6 September 2012, mangrove, (reg. 29445, Ma6823); 2 males, SMN1, 1 November 2012, mangrove, (reg. 29547, Ma6846); 3 females, SMN1, 8 November 2012, mangrove, (reg. 29560, Ma6850); 3 females, SMN1, 15 November 2012, mangrove, (reg. 29573, Ma6854); 2 females, SMN1, 29 November 2012, mangrove, (reg. 29599, Ma6857); 1 male, 1 female, SMN2, 1 November 2012, mangrove, (reg. 29548, Ma6862); 2 females, SMN2, 29 November 2012, mangrove, (reg. 29600, Ma6871); 2 females, SMN2, 15 November 2012, mangrove, (reg. 29574, Ma6875); 1 male, SMN1, 25 October 2012, mangrove, (reg. 29534, Ma6899); 1 female, SMN1, 18 October 2012, mangrove, (reg. 29521, Ma6906); 1 female, SMN2, 25 October 2012, mangrove, (reg. 29535, Ma6910); 4 females, SMN2, 18 October 2012, mangrove, (reg. 29522, Ma6923); 1 male, SMN1, 7 March 2013, mangrove, (reg. 29782, Ma6925); 2 females, SMN2, 4 April 2013, mangrove, (reg. 29839, Ma6971); 1 male, 2 females, SMN2, 25 April 2013, mangrove, (reg. 29881, Ma6972); 1 female, SMN2, 2 May 2013, mangrove, (reg. 29895, Ma6973); 1 male, 1 female, SMN1, 9 May 2013, mangrove, (reg. 29907, Ma7002); 2 females, SMN2, 9 May 2013, mangrove, (reg. 29908, Ma7014); 1 female, SMN2, 23 May 2013, mangrove, (reg. 29934, Ma7018); 1 male, 1 female, SMN3, 9 May 2013, mangrove, (reg. 29909, Ma7019); 1 female, SMN1, 6 June 2013, mangrove, (reg. 29980, Ma7040); 1 male, SMN1, 27 June 2013, mangrove, (reg. 29998, Ma7071); 1 female, SMN1, 18 July 2013, mangrove, (reg. 30037, Ma7079); 1 male, 2 female, SMN2, 27 July 2013, mangrove, (reg. 29999, Ma7093); 1 female, SMN3, 18 July 2013, mangrove, (reg. 30039, Ma7106); 2 females, SMN1, 26 September 2013, mangrove, (reg. 30162, Ma7186); 1 female, SMN1, 10 January 2013, mangrove, (reg. 29677, Ma7212); 1 male, SMN1, 24 January 2013, mangrove, (reg. 29703, Ma7221); 3 females, SMN2, 17 January 2013, mangrove, (reg. 29691, Ma7227); 1 male, SMN3, 31 January 2013, mangrove, (reg. 29718, Ma7230); 1 female, SMN1, 21 February 2013, mangrove, (reg. 29755,



Fig. 12. *Elaphropeza bakau*, new species, male habitus lateral.



Figs. 13–15. *Elaphropeza bakau*, new species: 13, right epandrial lamella; 14, epandrium with cerci, dorsal view; 15, left surstylus, lateral view. Scale bar = 0.1 mm.



Ma7260); Semakau replanted, 1 female, SMN1, 14 March 2013, mangrove, (reg. 29796, Ma7266); 1 male, SMN1, 28 February 2013, mangrove, (reg. 29768, Ma7270); 1 female, SMN1, 28 March 2013, mangrove, (reg. 29824, Ma7277); 1 female, SMN2, 7 February 2013, mangrove, (reg. 29730, Ma7283); 2 females, SMN2, 14 February 2013, mangrove, (reg. 29743, Ma7285); 1 male, 1 female, SMN2, 21 February 2013, mangrove, (reg. 29756, Ma7291); 2 males, 1 female, SMN2, 28 March 2013, mangrove, (reg. 29825, Ma7298); 2 females, SMN2, 28 May 2013, mangrove, (reg. 29769, Ma7301); 1 female, SMN1, 14 November 2013, mangrove, (reg. 30258, Ma7558); 1 male, 1 female, SMN1, 23 January 2014, mangrove, (reg. 30388, Ma7560); 1 female, SMN2, 5 December 2013, mangrove, (reg. 30298, Ma7567); 2 males, 1 female, SMN2, 19 December 2013, mangrove, (reg. 30324, Ma7571); 1 female, SMN2, 29 January 2014, mangrove, (reg. 30402, Ma7573); 1 male, 1 female, SMN3, 23 January 2014, mangrove, (reg. 30390, Ma7584); 2 females, SMN2, 24 October 2013, mangrove, (reg. 30220, Ma8024); 1 female, SMN1, 24 October 2013, mangrove, (reg. 30319, Ma8028); 2 males, SMN1, 31 October 2013, mangrove, (reg. 30232, Ma8032); 3 females, SMN2, 6 November 2013, mangrove, (reg. 30246, Ma8071); 1 male, SMN1, 13 February 2014, mangrove, (reg. 30427, Ma8778); 1 female, SMN1, 27 February 2014, mangrove, (reg. 30453, Ma8780); 1 male, SMN2, 7 February 2014, mangrove, (reg. 30415, Ma8782); 1 female, SMN2, 20 February 2014, mangrove, (reg. 30441, Ma8785); 1 female, SMN1, 21 November 2013, mangrove, (reg. 30271, Ma8830); 2 females, SMO1, 21 November 2013, mangrove, (reg. 30274, Ma8845); 5 male, 1 female, SMN1, 27 March 2014, mangrove, (reg. 30505, Ma8855); 8 males, 2 females, SMN1, 13 March 2014, mangrove, (reg. 30479, Ma8857); 1 female, SMN1, 6 March 2014, mangrove, (reg. 30466, Ma8859); 2 males, SMN1, 20 March 2014, mangrove, (reg. 30492, Ma8860); 2 males, 5 females, SMN2, 27 March 2014, mangrove, (reg. 30506, Ma8861); 3 females, SMN2, 13 March 2014, mangrove, (reg. 30480, Ma8864); 2 females, SMN3, 21 November 2013, mangrove, (reg. 30273, Ma8872); 1 male, SMN3, 16 January 2014, mangrove, (reg. 30377, Ma8916); 2 females, SMN2, 14 November 2013, mangrove, (reg. 30259, Ma8919); 1 male, 1 female, SMN3, 19 April 2012, mangrove, (reg. 29185, Ma0828), same sample as holotype.

**Etymology.** The epithet refers to the presence of the new species in mangrove (bakau means mangrove in Bahasa Malaysia).

**Diagnosis.** Species of the *E. ephippiata* group; recognised by almost entirely yellow thorax, including scutellum, only metanotum with narrow brown space just beyond scutellum, antenna pale yellow, with postpedicel about 2 times as long as wide, stylus black. Legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle, haltere yellow.

**Description.** Length: body 2.8 mm, wing 2.5 mm.

Male: Occiput entirely black, largely shining; with yellowish setation; inner verticals long inclinate, outer verticals hardly prominent. Anterior ocellars long proclinate, posterior

ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna pale yellow, stylus brown; pedicel with circlet of subequally short setulae; postpedicel short, nearly 2.0 times longer than wide; stylus with short pubescence, moderately long, nearly 2.0 times longer than postpedicel. Proboscis yellowish. Palpus pale, small, rounded, silvery pubescent, bearing scattered setulae, subapical seta moderately long.

Thorax almost entirely yellow only metanotum with narrow brown space just beyond scutellum; prothoracic sclerites, entire mesopleuron and mesonotum on anterior part laterally finely pale tomentose, otherwise shining; with yellowish setation. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 2 long notopleurals, 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); acrostichals short, arranged in 4 irregular rows anteriorly, hardly separated from dorsocentrals, lacking on prescutellar depression; dorsocentrals multiserial anteriorly, becoming less numerous toward scutellum, as long as acrostichals, 1 prescutellar pair very long.

Legs robust, almost entirely yellow, only tarsomere 5 of all legs brownish (except extreme base). Coxae and trochanters with unmodified setation. Fore femur thickened, with rows of anteroventral and posteroventral setulae on basal half which became spine-like on apical half and long seta near base, no subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with rows of anteroventral and posteroventral spinule-like setae, 1 long seta near base and 1 long subapical seta anteriorly. Mid tibia without ventral spinules but bearing 1 black subapical claw-like spine, lacking prominent setae (except subapicals). Hind femur with rather strong, moderately long anteroventrals and 3 erect dorsal setae near base. Hind tibia with 1 anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins  $bm-cu$  and  $r-m$  pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 57/32/33. Vein  $R_s$  long, slightly longer than crossvein  $bm-cu$ . Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein  $bm-cu$  perpendicular. Crossvein  $r-m$  before middle of cell  $bm$ . Haltere pale yellow.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish yellow, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest, shining, without squamiform setae, with numerous short pale setae on each side; tergite 5 dark brown, very narrow, undivided, with squamiform setae; tergites 6–7 brownish yellow, with moderately long posteromarginal setae; tergite 8 unmodified. Sternites yellowish to brownish yellow,

with scattered minute setulae, sternite 8 with rather short posteromarginal setae. Gland-like structure present between tergites 4–5.

Terminalia (Figs. 13–15) moderately large; left surstylus and apical part of right epandrial lamella brown, otherwise yellow (Fig. 12). Right epandrial lamella rectangular (Fig. 13), apex with a notch, near base with a long seta, setae on apical part short. Cerci fused (Fig. 14). Left surstylus composed of 3 sclerites: the small left surstylus 1 bears 3 setae, one very long seta on a tubercle. Inner side of left surstylus with a few long fine seta.

Female: Similar to male but fore femur without ventral spine-like setae and mid tibia without black subapical spine. Abdominal tergite 8 with 2 long setae anteriorly; cercus short, brownish yellow, with scattered setulae.

**Distribution.** Singapore.

**Remarks.** In having a completely yellowish white postpedicel *E. bakau*, new species resembles to *E. albicornis*, new species. However it has a yellow scutellum and metanotum and is easily distinguished from *E. albicornis*, new species that has a brown scutellum and metanotum. In the key to *Elaphropeza* of Singapore (Grootaert & Shamshev, 2012), *E. bakau*, new species and *E. pallida*, new species will run to couplet 70. However, both species have only tarsomere 5 brown and the key can be adapted as follows:

70. Fore tibia and tarsus, mid and hind tarsomere 5 brownish. Abdominal tergites 4 and 5 with squamiform setae. Male: cerci broadly fused, digitiform; right epandrial lamella truncate apically, lacking spines..... *E. furca* Shamshev & Grootaert, 2007
- Legs with only tarsomere 5 brown. Different combination of characters..... 70a
- 70a. Abdominal tergites 4 and 5 with squamiform setae. Scutum almost uniformly covered with short setae (sparser on prescutellar depression) (Singapore)..... *E. pallida*, new species
- Abdominal tergite 4 at most with slightly flattened setae, tergite 5 with squamiform setae. Acrostichals 2–4-serial, lacking on prescutellar depression..... 71b
- 70b. Antenna pale yellow; postpedicel very short, nearly 2 times longer than wide. Metanotum with narrow brown space just beyond scutellum (Singapore)..... *E. bakau*, new species
- Antenna with postpedicel brownish apically and longer, at least 3 times as long as wide. Metanotum usually yellow (except *E. chanae*)..... 71

***Elaphropeza chanoides*, new species**  
(Figs. 16–19)

**Material examined.** Holotype male: Singapore: Semakau Island, 1 male, SMO3, 17 October 2013, mangrove, (reg. 30211, Ma7602, terminalia dissected; leg extracted, barcode reference AB42570253). Paratype: Semakau Island, 1 male, SMO3, 3 January 2013, mangrove, (reg. 30354, Ma7635; terminalia dissected).

**Etymology.** The epithet refers to its resemblances to *E. chanae* Grootaert & Shamshev, 2012.

**Diagnosis.** Species of the *E. ephippiata* group; recognised by entirely yellow thorax, antenna with postpedicel about 4 times as long as wide, legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle.

**Description.** Length: wing 1.5 mm.

Male: Occiput entirely black; with yellowish setation; inner verticals long inclinate, outer verticals hardly prominent. Anterior ocellars long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel and stylus brownish (postpedicel paler near base); pedicel with circlet of subequally short setulae; postpedicel long narrow, nearly 4 times longer than wide, rather long pubescent; stylus with rather long pubescence, short, nearly as long as postpedicel. Proboscis brownish yellow. Palpus yellow, small, rounded, bearing scattered setulae, subapical seta short.

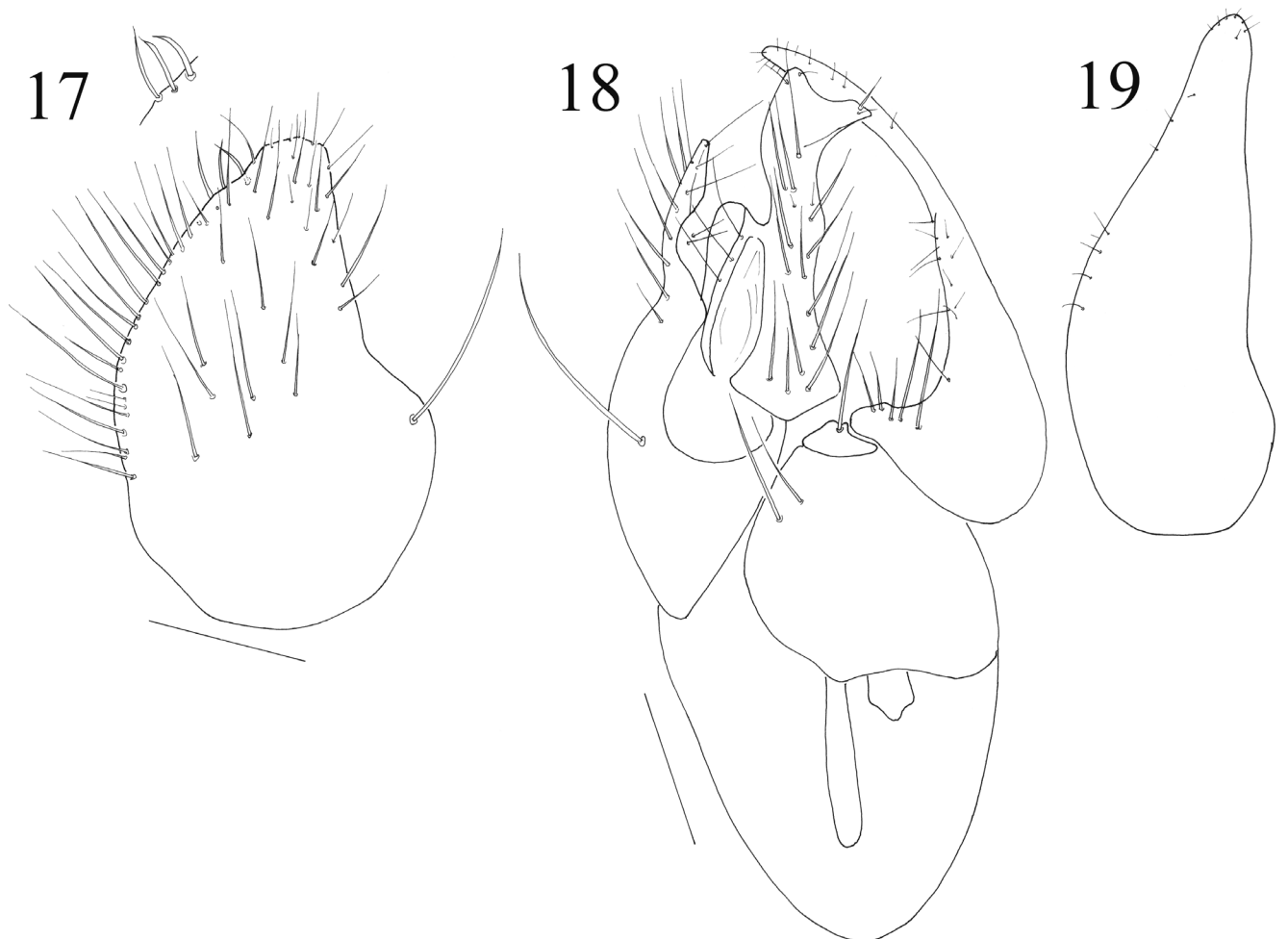
Thorax entirely yellow, shining, with yellowish setation. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 2 notopleurals of subequal lengths, 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); acrostichals short, arranged in 2 broad rows, rather scattered, lacking on prescutellar depression; dorsocentrals arranged in 3 irregular rows on anterior half of scutum, uniserial posteriorly, as long as acrostichals, 1 prescutellar pair very long.

Legs long, slender, almost entirely yellow, only tarsomere 5 of all legs brownish. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of hardly prominent minute anteroventral and longer spinule-like darkened posteroventral setulae, long seta near base, no subapical seta anteriorly. Fore tibia with black claw-like anteroventral subapical seta (Fig. 16), otherwise lacking prominent bristles. Mid femur with row of minute anteroventral and row of longer posteroventral spinule-like setae, 1 long seta near base and 1 long subapical seta anteriorly. Mid tibia without ventral spinules but bearing 1 short black anteroventral subapical spine-like seta, otherwise lacking prominent setae. Hind femur with short anteroventrals and 3–4 erect dorsal setae near base. Hind tibia with 1–2 anterodorsal bristles on about middle (in one specimen 2 anterodorsals on right tibia and 1 anterodorsal on left tibia); apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 24/18/23. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent



Fig. 16. *Elaphropeza chanoides*, new species, male habitus lateral. Genitalia removed and illustrated in Figs. 17–19.



Figs. 17–19. *Elaphropeza chanoides*, new species: 17, right epandrial lamella, lateral view with detail of subapical bristles; 18, epandrium with cerci, dorsal view; 19, left surstylus, lateral view. Scale bar = 0.1 mm.





Figs. 20–21. *Elaphropeza kranjiensis* Grootaert & Shamshev 2012 male habitus: 20, lateral; 21, dorsal.

near wing apex (Fig. 16), both straight. Crossvein bm-cu perpendicular. Crossvein r-m near middle of cell bm. Squama yellow, with long, brownish yellow setae. Haltere yellow.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest, with scattered ordinary setae of different lengths; tergite 5 narrow, undivided, with squamiform setae; Sternites yellowish to brownish yellow. Gland-like structure present between tergites 4–5, plate-like.

Terminalia (Figs. 17–19) rather large, left surstylus pale brownish, right epandrial lamella yellowish brown apically and yellow basally. Cerci brownish, narrowly fused; right cercus short, digitiform, with several short setae, lacking spines; left cercus long digitiform, with a complicated apical structure, as in Fig. 18, with additional lobe produced internally, dorsally covered with two rows of rather long setae. Epandrium completely divided. Right surstylus not prominent. Right epandrial lamella (Fig. 17) conical, with blunt apex, bearing 3 yellowish to brown subapical spines, with numerous moderately long setae longer along ventral margin. A single isolated long bristle near dorsal base. Left epandrial lamella fused to hypandrium, with 2 long seta apically (1 stronger). Left surstylus (Fig. 19) large, but narrow, apically pointed, with scattered setulae on inner side and dorsal border and several strong setae near base dorsally. Hypandrium with 2 long setae apically. Phallus short. Two rod-shaped apodemes present.

Female: unknown.

**Distribution.** Singapore.

**Remarks.** *Elaphropeza chanoides*, new species is very similar to *E. chanae* Grootaert & Shamshev, 2012. However there are some distinctive characters in the male genitalia as well as a different barcode. The pairwise distance between the two species is 12%. They cluster together in the neighbour joining tree but with a very low bootstrap (Grootaert, unpubl. data). The left surstylus is much more slender than in *E. chanae* and the right epandrial lamella bears only 3 yellowish to brownish subapical spines in *E. chanoides*, new species. In *E. chanae* there are 4 subapical bristles that are brown to black. The left cercus is more elongated in *E. chanoides* but with a similar complicated apical structure. In the holotype of *E. chanoides* there is only 1 long isolated bristle on the dorsal border of the right epandrial lamella, but in the paratype there are 2 bristles like in *E. chanae*.

We refer to the comments and the key under *E. lowioides*, new species for identification of the species.

***Elaphropeza kranjiensis*, Grootaert & Shamshev, 2012**  
(Figs. 20, 21)

*E. kranjiensis* Grootaert & Shamshev, 2012: 109 (male, figs 165–168). Type locality: Singapore, Kranji Nature trail.

**Material examined.** Singapore: Semakau Island, 1 female, SMN1, 16 May 2013, mangrove, (reg. 29920, Ma7006); 1 male, SMN3, 13 June 2013, mangrove, (reg. 29974, Ma7050); 1 male, SMN3, 24 October 2013, mangrove, (reg. 30221, Ma7967); 1 male, SMN1, 28 November 2013, mangrove, (reg. 30284, Ma8035); Sungei Buloh, 1 male, SB1, 19 March 2014, mangrove, (reg. 30488, Ma8883).

**Diagnosis.** Species of the *E. ephippiata* group; recognised by reddish yellow thorax, scutum brown laterally, scutellum, metanotum, hypopleuron and metapleuron brown; antenna brownish yellow, postpedicel about 2.5 times longer than wide; legs with tibiae yellowish brown, tarsomere 5 brown; haltere brown.

**Description.** Length: wing 2.8 mm.

Female (described for the first time): Similar to male except sexual differences (Grootaert & Shamshev, 2012: 109, Figs. 165–168). Gland-like structure between abdominal tergites 4–5 absent; tergite 7 with short posteromarginal setae; segment 8 rather short, broad, yellowish brown, with separated tergite and sternite; tergite 10 narrowly separated along mid line, fused with sternite 10. Cercus small, yellowish brown, with scattered short setae.

**Distribution.** Singapore.

***Elaphropeza lowioides*, new species**  
(Figs. 22–25)

**Material examined.** Holotype male: Singapore: Semakau Island, SMN3, 24 May 2012, mangrove, (reg. 29250, Ma0824). Paratype: Semakau Island, 1 female, SMN1, 12 July 2012, mangrove, (reg. 29339, Ma6788).

**Etymology.** The epithet refers to its resemblance to *E. lowi* Grootaert & Shamshev, 2012.

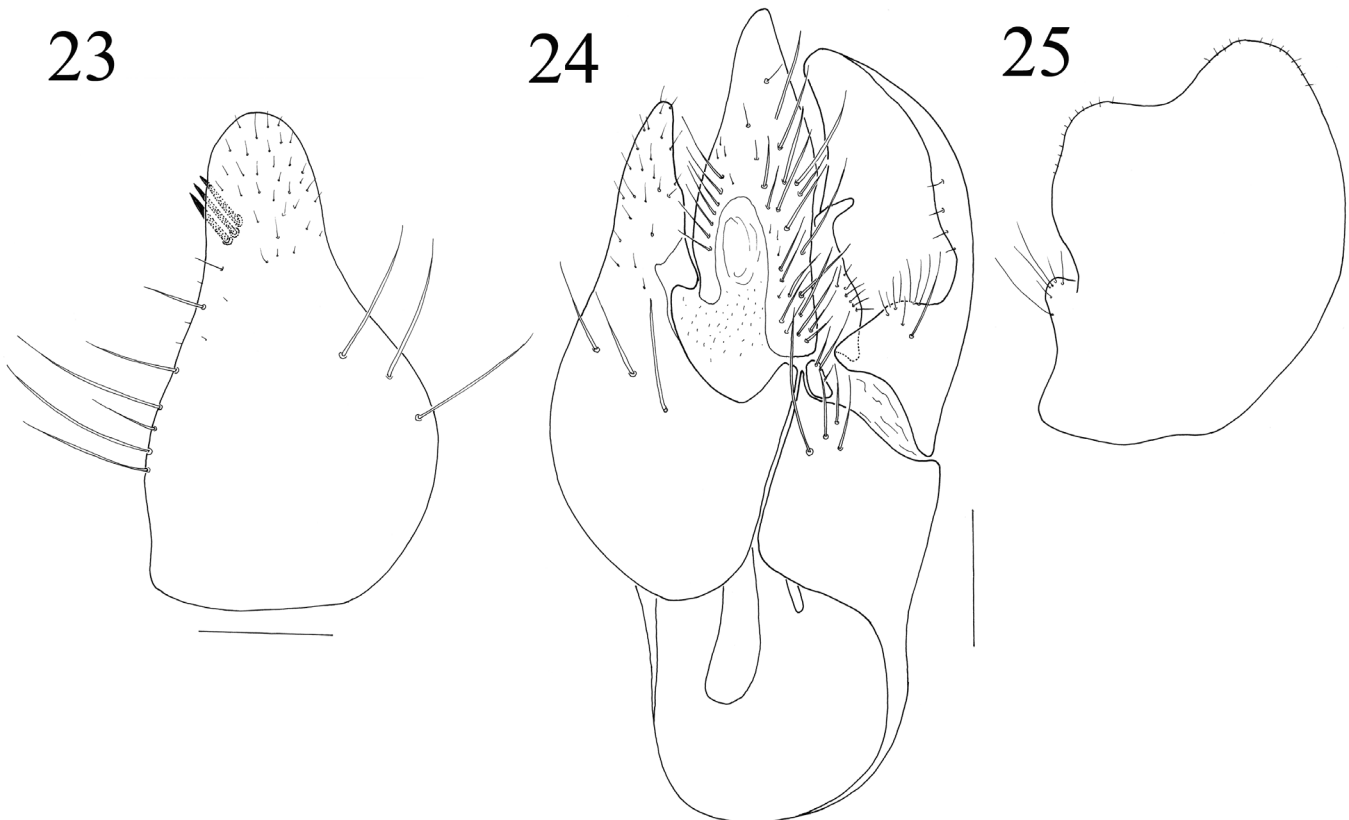
**Diagnosis.** Species of the *E. ephippiata* group; recognised by entirely yellow thorax, antenna with postpedicel about 3 times as long as wide, legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle, haltere yellow.

**Description.** Length: wing 1.8 mm.

Male: Occiput entirely black, largely shining; with yellowish setation; inner verticals long inclinate, outer verticals hardly prominent. Anterior ocellars long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel somewhat darker toward apex, stylus brownish; pedicel with circlet of subequally short setulae; postpedicel short, 3.3 times longer than wide; stylus with short pubescence, moderately long, 1.5 times longer than postpedicel. Proboscis brownish yellow. Palpus yellow, small, rounded, bearing scattered setulae, subapical seta hardly prominent.



Fig. 22. *Elaphropeza lowioides*, new species, male habitus lateral. Genitalia removed and illustrated in Figs. 23–25.



Figs. 23–25. *Elaphropeza lowioides*, new species: 23, right epandrial lamella, lateral view; 24, epandrium with cerci, dorsal view; 25, left surstylus, lateral view. Scale bar = 0.1 mm.



Thorax entirely yellow, shining, with brownish yellow longer setae. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 2 long notopleurals, 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); acrostichals short, arranged in 4 rows, hardly separated from dorsocentrals, lacking on prescutellar depression; dorsocentrals multiserial, sparser toward scutellum, 1 prescutellar pair very long.

Legs robust, almost entirely yellow, only tarsomere 5 of all legs brownish. Coxae and trochanters with unmodified setation. Fore femur thickened, with hardly prominent rows of anteroventral and posteroventral setulae and long seta near base, no subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with row of minute anteroventral and row of longer posteroventral spinules, 1 long seta near base and 1 long subapical seta anteriorly. Mid tibia with black ventral spinules and 1 subapical claw-like spine, lacking prominent setae (except subapicals). Hind femur with hardly prominent anteroventrals and 3 erect dorsal setae near base. Hind tibia with 1 moderately long brownish anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 29/25/24. Vein Rs long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein bm-cu perpendicular. Crossvein r-m somewhat before middle of cell bm. Haltere pale yellow.

Abdomen. Tergite 1 almost entirely pale yellow; tergites 2–3 brownish yellow, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest, shining, without squamiform setae, with several moderately long pale setae on each side; tergite 5 dark brown, very narrow, undivided, with squamiform setae; tergites 6–7 brownish yellow, with rather long posteromarginal setae; tergite 8 unmodified. Sternites yellowish to brownish yellow, with scattered minute setulae, sternite 8 with rather short posteromarginal setae. Gland-like structure present between tergites 4–5.

Terminalia (Figs. 23–25) moderately large, with left surstylus brownish, otherwise yellow. Right epandrial lamella triangular with rounded tip, with 3 subapical spine-like black bristles on the inner side (Fig. 23). Right and left cercus fused, large protruding from epandrial lamellae, conical without folds or extensions (Fig. 24). Left epandrial lamella with 4 bristles. Left surstylus large with a few longer bristles at base, otherwise with minute bristles (Fig. 25).

Female: Similar to male.

**Distribution.** Singapore.

**Remarks.** *Elaphropeza lowioides*, new species belongs to a complex of six species: *E. chanae* Grootaert & Shamshev, 2012, *E. chanoides*, new species, *E. gohae* Grootaert & Shamshev, 2012, *E. lowi* Grootaert & Shamshev, 2012 and *E. malayensis* Shamshev & Grootaert, 2007. Externally they are difficult to distinguish, and the male genitalia should be checked if possible.

In the key to *Elaphropeza* of Singapore (Grootaert & Shamshev, 2012) this species complex runs to couplet 71 (small yellow species with scutum and scutellum entirely yellow, with yellow legs with only tarsomere 5 brown to black, acrostichals lacking on the prescutellar depression and white halteres).

A modified key is proposed to this complex because the original couplet 71 enquires if the length of the postpedicel is 3.3 to 4.0 times as long as wide versus postpedicel nearly 3 times as long as wide. Though this character is correct, it is difficult to use.

- 71. Male fore tibia with a subapical spine or spine-like bristle... 71a
- Male fore tibia without subapical spine or spine-like bristle. 71d
- 71a. Antennal stylus nearly as long as postpedicel ..... 71b
- Antennal stylus longer than postpedicel, about 1.5 times as long ..... 71c
- 71b. Right epandrial lamella with 4 brown to black subapical spine-like bristles on inner side (Fig. 137 in Grootaert & Shamshev, 2012). Left surstylus triangular (Fig. 139)..... *E. chanae* Grootaert & Shamshev, 2012
- Right epandrial lamella with only 3 pale flattened subapical bristles (Fig. 17). Left surstylus narrower (Fig. 19)..... *E. chanoides*, new species
- 71c. Right epandrial lamella with 3 subapical spine-like bristles (Fig. 23). Left cercus large, triangular, tip pointed (Fig. 24). ..... *E. lowioides*, new species
- Right epandrial lamella without subapical spine-like bristles. Tip of left cercus with an extension..... *E. gohae* Grootaert & Shamshev, 2012
- 71d. Right epandrial lamella with elbow-like bowed apex bearing 3 black spine-like bristles (Fig. 133 in Grootaert & Shamshev, 2012)..... *E. malayensis* Shamshev & Grootaert, 2007
- Right epandrial lamella with broadened apex without black spine-like bristles (Fig. 145)..... *E. lowi* Grootaert & Shamshev, 2012

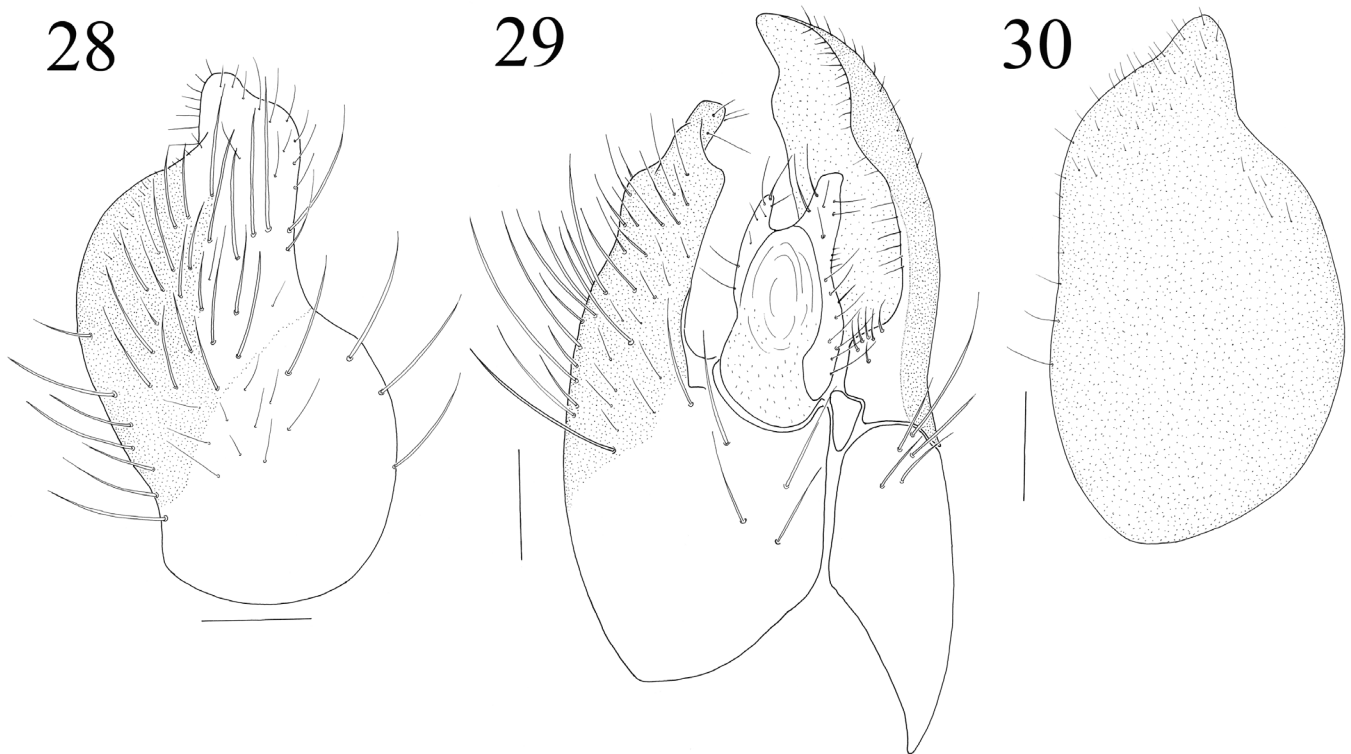
***Elaphropeza melanuroides*, new species**  
(Figs. 26–30)

**Material examined.** Holotype male: Singapore: Pulau Ubin, PU3, 26 May 2012, mangrove, (reg. 29256, Ma0889). Paratypes: Semakau Island, 1 male, SMO3, 27 December 2013, mangrove, (reg. 29656, Ma6747); 3 females, SMO3, 7 March 2013, mangrove, (reg. 29787, Ma6751); 3 males, SMO3, 21 March 2013, mangrove, (reg. 29815, Ma6758); 1 male, SMN1, 27 December 2012, mangrove, (reg. 29651,



Figs. 26–27. *Elaphropeza melanuroides* , new species, male habitus: 26, lateral; 27, dorsal.





Figs. 28–30. *Elaphropeza melanuroides*, new species: 28, right epandrial lamella, lateral view; 29, epandrium with cerci, dorsal view; 30, left surstylus, lateral view. Scale bar = 0.1 mm.

Ma6769); 1 male, SMN2, 6 December 2012, mangrove, (reg. 29613, Ma6770); 1 male, SMO3, 25 October 2012, mangrove, (reg. 29539, Ma6831); 1 male, 1 female, SMO3, 18 October 2012, mangrove, (reg. 29526, Ma6838); 2 males, 1 female, SMO3, 8 November 2012, mangrove, (reg. 29578, Ma6888); 1 male, SMO3, 29 November 2012, mangrove, (reg. 29604, Ma6896); 1 male, SMN3, 4 October 2012, mangrove, (reg. 29497, Ma6915); 2 males, SMO3, 14 March 2013, mangrove, (reg. 29801, Ma6948); 1 male, SMO1, 11 April 2013, mangrove, (reg. 29855, Ma6975); 1 male, 1 female, SMO3, 18 April 2013, mangrove, (reg. 29871, Ma6990); 1 male, SMO3, 25 April 2013, mangrove, (reg. 29885, Ma6995); 1 male, SMO2, 23 May 2013, mangrove, (reg. 29937, Ma7025); 1 male, SMO3, 16 May 2013, mangrove, (reg. 29925, Ma7029); 2 females, SMN3, 13 June 2013, mangrove, (reg. 29974, Ma7048); 2 males, SMO1, 6 June 2013, mangrove, (reg. 29962, Ma7051); 1 male, SMN1, 13 June 2013, mangrove, (reg. 29972, Ma7065); 1 male, SMN3, 14 November 2013, mangrove, (reg. 30260, Ma8866); 1 female, SMN3, 1 August 2013, mangrove, (reg. 30068, Ma7101); 1 male, SMO1, 13 June 2013, mangrove, (reg. 29975, Ma7115); 1 male, 1 female, SMO3, 11 July 2013, mangrove, (reg. 30024, Ma7144); 1 male, SMO3, 28 November 2013, mangrove, (reg. 30289, Ma7153); 1 male, SMO3, 7 August 2013, mangrove, (reg. 30081, Ma7175); 1 male, SMN2, 3 January 2013, mangrove, (reg. 29665, Ma7225); 2 males, SMO3, 28 March 2013, mangrove, (reg. 29829, Ma7242); 1 male, SMN1, 28 March 2013, mangrove, (reg. 29824, Ma7276); 2 males, SMO3, 11 April 2013, mangrove, (reg. 29857, Ma7594); 1 male, SMO3, 5 December 2013, mangrove, (reg. 30301, Ma7619); 1 female, SMO3, 29 January 2013, mangrove, (reg. 30406, Ma7626); 1 male, SMO3, 31 October 2013, mangrove, (reg.

30237, Ma8000); Pulau Ubin, 2 males, PU2, 23 June 2012, mangrove, (reg. 29307, Ma7447); 1 male, PU1, 1 April 2013, mangrove, (reg. 29830, Ma7451); 1 female, PU1, 24 June 2013, mangrove, (reg. 30004, Ma7458); 1 female, PU4, 24 June 2013, mangrove, (reg. 30006, Ma7461); 1 female, PU1, 22 September 2012, mangrove, (reg. 29475, Ma7512); 2 males, PU2, 29 September 2012, mangrove, (reg. 29489, Ma7515); 1 male, PU2, 2 February 2013, mangrove, (reg. 29723, Ma7537); 1 female, PU2, 27 April 2013, mangrove, (reg. 29887, Ma7646); 1 male, PU2, 29 March 2014, mangrove, (reg. 30512, Ma8885).

**Etymology.** The epithet refers to its resemblance to *E. melanura* Bezzi 1912.

**Diagnosis.** Species of the *E. ephippiata* group; recognised by yellow thorax but scutellum and metanotum brown, antenna with postpedicel about 2.5 times as long as wide, legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle, 2 pairs of long prescutellars, haltere yellow.

**Description.** Length: wing 2.3 mm.

Male: Occiput entirely black, largely shining; with yellowish setation; inner verticals long inclinate, outer verticals somewhat shorter. Anterior ocellars moderately long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel toward apex and stylus brownish; pedicel with circlet of subequally short setulae; postpedicel short, 2.5–2.7 times longer than wide; stylus with short pubescence, moderately long, nearly 1.5 times longer than postpedicel. Proboscis yellowish. Palpus



yellow, small, rounded, silvery pubescent, bearing scattered setulae, subapical seta moderately long.

Thorax yellow but scutellum and metanotum brown; shining, with yellow to brownish yellow setation. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 3 notopleurals (middle seta shorter), 1 moderately long postsutural supra-alar, 1 longer postalar and 4 scutellars (apical pair very long, cruciate; lateral pair short); acrostichals and dorsocentrals undifferentiated, scutum entirely covered with uniform setulae, 2 pairs of long prescutellars (anterior much shorter).

Legs long, slender, almost entirely yellow, only tarsomere 5 of all legs brown. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of minute anteroventral and posteroventral setae, 1 long seta near base, 1 short subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with spinule-like ventral setulae more numerous on basal part, 1 long seta near base and 1 long subapical seta anteriorly. Mid tibia without ventral spinules, lacking prominent setae (except subapicals). Hind femur with hardly prominent anteroventrals, 4 erect dorsal setae near base and 1 longer subapical seta anteriorly. Hind tibia with 1 anterodorsal pale brown bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 47/30/35. Vein Rs long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  almost parallel near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein bm-cu perpendicular. Crossvein r-m before middle of cell bm. Squama yellow, with long, brownish yellow setae. Haltere pale yellow.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest, with numerous squamiform setae; tergite 5 very narrow, undivided, with squamiform setae; tergites 6 somewhat broader than tergite 5, with moderately long posteromarginal setae; tergite 7 broad, with very long posteromarginal setae; tergite 8 unmodified. Sternites yellowish to brownish yellow, with scattered minute setulae, sternite 8 with short posteromarginal setae. Gland-like structure present between tergites 4–5.

Terminalia (Figs. 28–30) rather large; cerci, apical half of right epandrial lamella and left surstylus brown (Figs. 26–27). Right epandrial lamella densely covered with long bristles (Fig. 28). Cerci small, narrowly fused (Fig. 29). Left epandrial lamella with quite long bristles near tip. Left surstylus oval, but apex pointed.

Female: Similar to male.

**Distribution.** Singapore.

**Remarks.** In the key to the Oriental *Elaphropeza* (see Grootaert & Shamshev, 2012) the new species will lead to *E. melanura* Bezzi, 1912 described from Taiwan and indeed the species are quite similar. Unfortunately the neotype male was not dissected to illustrate the male terminalia. Nevertheless there are many distinct characters to distinguish the two species.

In *E. melanura* the inner verticals are long, the outer ones are hardly prominent. In *melanuroides* inner verticals are as long as outer verticals. The postpedicel is 1.5 times as long as wide and brown in *E. melanura* while 2.5 times as long and brown with base ventrally yellow in *E. melanuroides*. There is 1 long prescutellar bristle in *melanura* while 2 longer prescutellars in *E. melanuroides*. Haltere is yellow in *E. melanura* while white in *E. melanuroides*. Mid femur in *E. melanura* with 2 rows of spine-like, short ventral bristles. In *E. melanuroides* mid femur is with bristles that are not spine-like, however on apical third there are some darker bristles.

***Elaphropeza obscura*, new species**  
(Figs. 31–34)

**Material examined.** Holotype male: Singapore, Semakau Island, SMN3, 13 April 2012, mangrove, (reg. 29185, Ma0826). Paratypes: Singapore: Semakau Island, 1 female, SMO2, 26 April 2012, mangrove, (reg. 29200, Ma0805); Semakau replanted, 1 female, SMN1, 6 June 2013, mangrove, (reg. 29980, Ma7041); 1 female, SMO1, 12 September 2013, mangrove, (reg. 30144, Ma7193); 1 male, SMN2, 17 January 2013, mangrove, (reg. 29691, Ma7230); 1 female, SMO3, 7 February 2013, mangrove, (reg. 29731, Ma7240); 1 male, SMN1, 30 October 2013, mangrove, (reg. 30180, Ma7961).

**Etymology.** The epithet refers to the dark colour of the body.

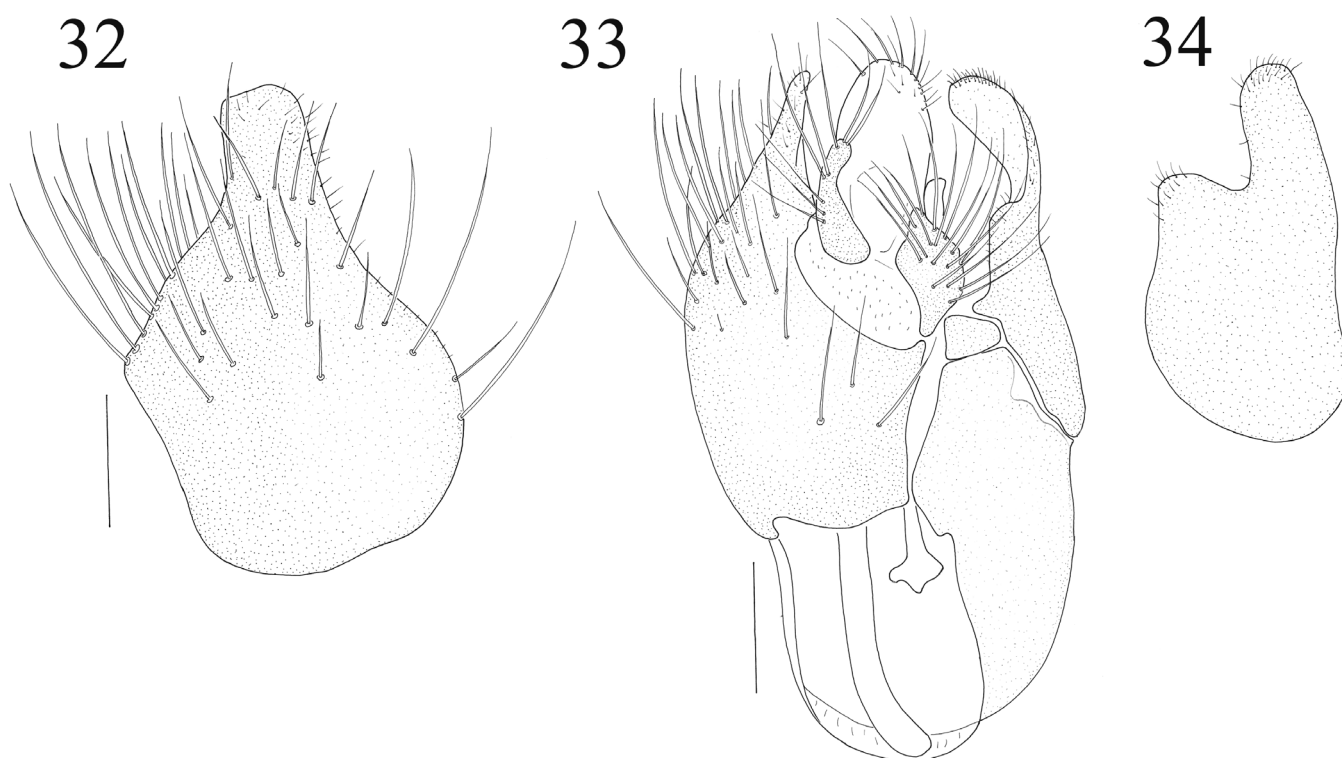
**Diagnosis.** Species of the *E. ephippiata* group; recognised by entirely brown thorax, brown palpus, largely brown legs and intensively darkened wings, hind tibia with 1 anterodorsal bristle, haltere brownish.

**Description.** Length: body 2.8 mm, wing 2.3 mm.

Male: Occiput entirely black, largely shining; with brownish to black setation; inner verticals long strong inclinate, outer verticals somewhat shorter and thinner. Anterior ocellars long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel reddish brown, postpedicel and stylus brownish; pedicel with circlet of subequally short setulae; postpedicel long narrow, 4.5–5 times longer than wide; stylus with short pubescence, long, slightly longer than postpedicel. Proboscis brownish. Palpus brown, small, rounded, bearing scattered brownish setulae, subapical seta moderately long.



Fig. 31. *Elaphropeza obscura*, new species, male habitus lateral. Genitalia removed and illustrated in Figs. 32–34.



Figs. 32–34. *Elaphropeza obscura*, new species: 32, right epandrial lamella, lateral view; 33, epandrium with cerci, dorsal view; 34, left surstylus, lateral view. Scale bar = 0.1 mm.

Thorax entirely brown, shining, with brownish to black setation. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 2 subequally long notopleurals, 1 similar postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair short); scutum entirely covered with uniform minute setae, 2 pairs of prescutellars (posterior long, anterior short).

Legs long, slender, largely brown to yellowish brown, fore coxa and femur paler, rather brownish yellow. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of minute anteroventral and posteroventral setae, 1 long seta near base, no subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with ventral spinule-like setae more numerous on basal half, 1 long thin seta near base and 1 long strong subapical seta anteriorly. Mid tibia without ventral spinules, lacking prominent setae (except quite strong subapicals). Hind femur with short anteroventrals and 3 erect dorsal setae near base. Hind tibia with 1 anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, broadly brownish along anterior margin, covered with uniform microtrichia; veins mostly brown, basal section of  $M_{1+2}$ , short section of  $R_{4+5}$  just before wing margin, crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 52/29/30. Vein Rs long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein bm-cu slightly oblique. Crossvein r-m near middle of cell bm. Squama brown, with long, brownish setae. Haltere brownish.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, shining, broadest, with squamiform setae; tergite 5 very narrow, undivided, with squamiform setae; tergites 6 somewhat broader than tergite 5, with short posteromarginal setae; tergite 7 broad, with long posteromarginal setae; tergite 8 unmodified. Sternites brownish, sternite 4 broadly divided, with scattered short setae. Gland-like structure present between tergites 4–5.

Terminalia (Figs. 32–34) rather small, brown. Right epandrial lamella with long dark bristles (Fig. 32). Cerci small, enclosed in lamellae (Fig. 33). Left surstylus with only minute bristles.

Female: Similar to male. Abdominal tergite 6 broad, with triangular excision anteriorly; segment 7 dark brown, broad; segment 8 narrow, upturned; cercus brownish, with some minute setae.

**Distribution.** Singapore.

**Remarks.** In the key to *Elaphropeza* of Singapore (Grootaert & Shamshev, 2012) *E. obscura*, new species runs to couplet 3. It possesses 1 anterodorsal bristle on the hind tibiae and can be distinguished from *E. strigifera* (de Meijere) by the postpedicel being 4.5 to 5 times as long as wide, legs are largely brown to yellow brown and wing is broadly brownish along anterior margin. In the *E. strigifera*, postpedicel is short, 1.5 times as long as wide. All legs have only tarsomere 5 black and wing is hyaline along anterior and posterior margin, otherwise brownish, including wing apex.

***Elaphropeza pallida*, new species**  
(Figs. 35–39)

**Material examined.** Holotype male: Singapore: Semakau Island, SMN3, 24 May 2012, mangrove, (reg. 29250, Ma0823). Paratypes: Singapore: Semakau Island, 1 male, SMN3, 23 April 2012, mangrove, (reg. 29211, Ma0819); 2 males, 2 females, SMN1, 13 June 2013, mangrove, (reg. 29972, Ma7066); 1 male, SMN1, 17 January 2013, mangrove, (reg. 29690, Ma7217); 1 female, SMO3, 7 February 2014, mangrove, (reg. 30419, Ma8790); 1 male, SMO3, 13 February 2014, mangrove, (reg. 30432, Ma8794); 1 male, SMN1, 21 November 2013, mangrove, (reg. 30271, Ma8833); 1 male, SMN3, 11 July 2013, mangrove, (reg. 30026, Ma8843); 1 male, SMN3, 13 April 2012, mangrove, (reg. 29185, Ma0827).

**Etymology.** The epithet refers to the pale (Lat. pallidus, a) colour of the body.

**Diagnosis.** Species of the *E. ephippiata* group; recognised by entirely yellow thorax, antenna with postpedicel about 2.5 times as long as wide, legs yellow with only tarsomere 5 brown, hind tibia with 1 anterodorsal bristle, acrostichal and dorsocentral bristles multiserial, haltere yellow.

**Description.** Length: body 2.0 mm, wing 1.7 mm.

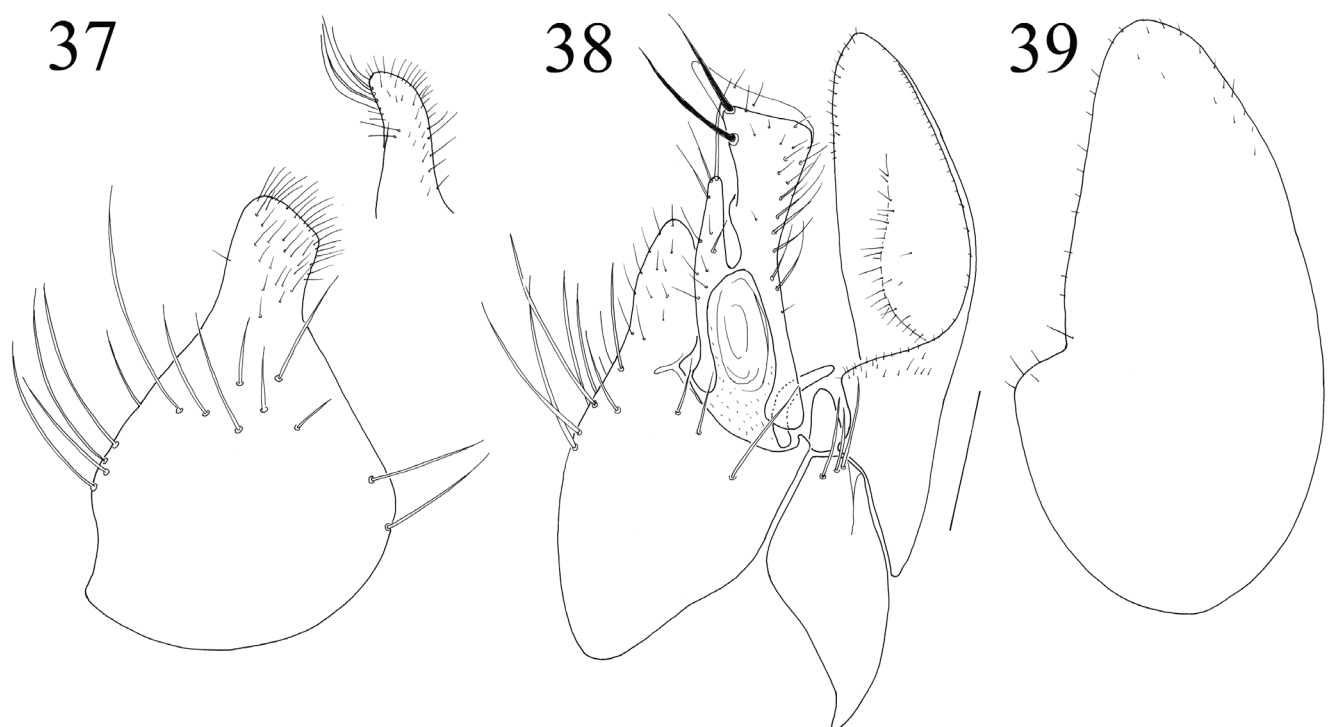
Male: Occiput entirely black, largely shining; with yellowish setation; inner verticals long inclinate, outer verticals short inclinate. Anterior ocellars long proclinate and cruciate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel rather brownish yellow, stylus brownish; pedicel with circlet of subequally short setulae; postpedicel conical, short, nearly 2.3 times longer than wide; stylus with short pubescence, moderately long, 1.4 times longer than postpedicel. Proboscis brownish yellow. Palpus yellow, small, rounded, bearing scattered setulae, subapical seta short.

Thorax entirely yellow, shining, with brownish yellow longer setae. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute setula on upper part. Postpronotal seta hardly prominent. Mesonotum with 2 long notopleurals, 1 short postsutural supra-alar, 1 similar postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); scutum almost uniformly covered with short setae





Fig. 35–36. *Elaphropeza pallida*, new species, male habitus: 35, lateral; 36, dorsal.



Figs. 37–39. *Elaphropeza pallida*, new species: 37, right epandrial lamella, lateral view; 38, epandrium with cerci, dorsal view; 39, left surstylus, lateral view. Scale bar = 0.1 mm.

(sparser on prescutellar depression), with 1 pair of very long prescutellars.

Legs rather robust, almost entirely yellow, only tarsomere 5 of all legs brownish. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with hardly prominent rows of anteroventral and posteroventral setulae and long seta near base, no subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with row of minute anteroventral and row of longer posteroventral spinules, 1 long seta near base and 1 long subapical seta anteriorly. Mid tibia with 2 rows of slightly prominent black ventral spinules on about apical half, lacking prominent setae (except subapicals). Hind femur with hardly prominent anteroventrals and 3 erect dorsal setae near base. Hind tibia with 1 moderately long black anterodorsal bristle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 31/22/25. Vein Rs long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein bm-cu slightly oblique. Crossvein r-m near middle of cell bm. Haltere yellow.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest,

with numerous squamiform setae laterally; tergite 5 very narrow, undivided, with several squamiform setae; tergites 6–7 broad, undivided, weakly sclerotised, tergite 7 with several long posteromarginal setae; tergite 8 unmodified. Sternites yellowish, with scattered minute setulae. Gland-like structure present between tergites 4–5.

Terminalia (Figs. 37–39) rather large, yellow (Fig. 35). Right epandrial lamella with a few long bristles, surstylus fused with lamella (Fig. 37). Left cercus very large, tip truncated with a pair of long black apical bristles (Fig. 38). Right cercus short. Left epandrial lamella with 3 bristles. Left surstylus very large with only minute bristles (Fig. 39).

Female: Unknown.

**Distribution.** Singapore.

**Remarks.** In the key to *Elaphropeza* of Singapore (Grootaert & Shamshev, 2012) *E. pallida*, new species runs to couplet 67. These are species with scutellum entirely yellow. *Elaphropeza asiophila* and *E. ubinensis* have a darkened haltere and acrostichals extending to the base of the scutellum. *Elaphropeza pallida*, new species has yellow halteres and the acrostichals also extending to the base of the scutellum so we let it run to couplet 70.

- |   |    |
|---|----|
| 67. Scutellum entirely yellow .....   | 68 |
| – Scutellum largely brown or black .....  | 74 |
| 68. Haltere darkened. Acrostichal bristles extending to base of scutellum. Postpedicel at least 4.5 times as long as wide..                   | 69 |
| – Haltere yellow. Acrostichal bristles lacking on prescutellar depression (except <i>E. pallida</i> , new species). Postpedicel shorter ..... | 70 |

69. Postpedicel about 6.0 times longer than wide. Metanotum reddish-yellow (Singapore).....*E. asiophila* Shamshev & Grootaert, 2007
- Postpedicel about 4.5 times longer than wide. Metanotum brownish (Singapore).....*E. ubinensis* Shamshev & Grootaert, 2007
70. Fore tibia and tarsus, mid and hind tarsomere 5 brownish. Abdominal tergites 4 and 5 with squamiform setae. Male: cerci broadly fused, digitiform; right epandrial lamella truncate apically, lacking spines.....*E. furca* Shamshev & Grootaert, 2007
- Legs with only tarsomere 5 brown. Different combination of characters.....71a
- 71a. Abdominal tergites 4 and 5 with squamiform setae. Scutum almost uniformly covered with short setae (sparser on prescutellar depression) (Singapore).....*E. pallida* sp. nov.
- Abdominal tergite 4 at most with slightly flattened setae, tergite 5 with squamiform setae. Acrostichals 2–4–serial, lacking on prescutellar depression.....71b

***Elaphropeza singulata*, Shamshev & Grootaert, 2007**  
(Figs. 40–42)

*E. singulata*, Shamshev & Grootaert, 2007: 107 (female, fig. 181).  
Type locality: Singapore: Bukit Timah.

**Material examined.** Singapore: Semakau Island, 1 male, SMO2, 11 July 2013, mangrove, (reg. 30028, Ma7139).

**Diagnosis.** Species of the *E. ephippiata* group; recognised by yellow thorax with scutellum, metanotum brownish, lower part of metapleuron and almost entire hypopleuron dark brown; antenna yellow, with postpedicel about 2 times as long as wide; legs yellow with only tarsomere 5 brownish, hind tibia with 1 anterodorsal bristle; acrostichals biserial, lacking on prescutellar depression; haltere brownish.

**Description.** Length: body 2.1 mm, wing 1.9 mm.

Male (described for the first time): Occiput entirely black, largely shining; with yellowish setation; inner verticals very long inclinate, outer verticals not prominent. Anterior ocellars long proclinate, posterior ocellars minute. Frons shining, very narrow, above antennae about as broad as anterior ocellus. Antenna with scape, pedicel and postpedicel yellow, stylus brownish; pedicel with circlet of subequally short setulae; postpedicel short, 2.0 times longer than wide; stylus with short pubescence, long, 3.6 times longer than postpedicel. Proboscis brownish yellow. Palpus yellow, small, rounded, silvery pubescent, bearing scattered setulae, subapical seta short.

Thorax yellow but scutellum (in some view upper margin appearing paler) and metanotum (except lateral corners) brownish, hypopleuron and lower part of mesonotum brown forming subglobular spot; shining, with yellowish to brownish yellow setation. Prothoracic episterna lacking long upturned seta just above fore coxa, with minute seta on upper part. Postpronotal bristle prominent, short. Mesonotum with 2 long notopleurals, 1 short postsutural supra-alar, 1 long postalar and 4 scutellars (apical pair very long, cruciate; lateral pair minute); acrostichals rather long (especially last pair),

arranged in 2 irregular rows, sparse (5 in row), lacking on prescutellar depression, broadly separated from dorsocentrals by bare space; dorsocentrals 1–2–serial, sparse, similar to acrostichals, 1 prescutellar pair very long; additionally, some shot thin setae present on notopleuron.

Legs quite robust, almost entirely yellow, only tarsomere 5 of all legs brownish. Coxae and trochanters with unmodified setation. Fore femur slightly thickened, with rows of minute anteroventral and posteroventral setae and 1 long seta near base, no subapical seta anteriorly. Fore tibia lacking prominent bristles (except subapicals). Mid femur with rows of minute anteroventral and somewhat longer posteroventral spinule-like setae, 1 long seta near base and 1 long subapical brown seta anteriorly. Mid tibia without ventral spinules and apical black claw-like spine, lacking prominent setae (except subapicals). Hind femur with short anteroventrals and 3 erect dorsal setae near base. Hind tibia with 1 anterodorsal bristle on about middle; apical projection small, rounded, brownish. Tarsi of all legs unmodified, with unmodified setation.

Wing normally developed, finely infusate, covered with uniform microtrichia; veins mostly yellowish brown, basal section of  $M_{1+2}$ , crossveins bm-cu and r-m pale. Costal vein with moderately long, uniform setulae along anterior margin. Costal bristle long, brown. Costal index: 41/25/32. Vein  $R_s$  long, slightly longer than crossvein bm-cu. Vein  $R_{2+3}$  evenly bowed. Veins  $R_{4+5}$  and  $M_{1+2}$  somewhat divergent near wing apex,  $R_{4+5}$  slightly bowed,  $M_{1+2}$  straight. Vein  $CuA_1$  reaching wing margin. Vein  $A_1$  lacking. Crossvein bm-cu slightly oblique. Crossvein r-m before middle of cell bm. Squama brown, with long, brownish yellow setae. Haltere brownish.

Abdomen. Tergite 1 pale yellow; tergites 2–3 brownish, subtriangular viewed laterally, divided medially, with scattered unmodified setae; tergite 4 dark brown, broadest, subshining, with numerous squamiform setae; tergite 5 very narrow, brown, undivided, with squamiform setae; tergites 6–7 yellowish, tergite 6 divided, with short posteromarginal setae; tergite 7 broad, undivided, with long posteromarginal setae; tergite 8 unmodified. Sternites yellowish, with scattered minute setulae, sternite 8 with long posteromarginal setae. Gland-like structure present between tergites 4–5, plate-like. Terminalia (Figs. 41–43) moderately large, with left surstylus brown, otherwise yellow. Right epandrial lamella bearing a bundle of stiff brown bristles subapically and a digitiform projection on ventral border (Fig. 41). Right cercus much larger than left cercus with a truncated tip (Fig. 42). Left epandrial lamella with numerous short bristles near apex. Left surstylus large, rounded.

Female: See original description.

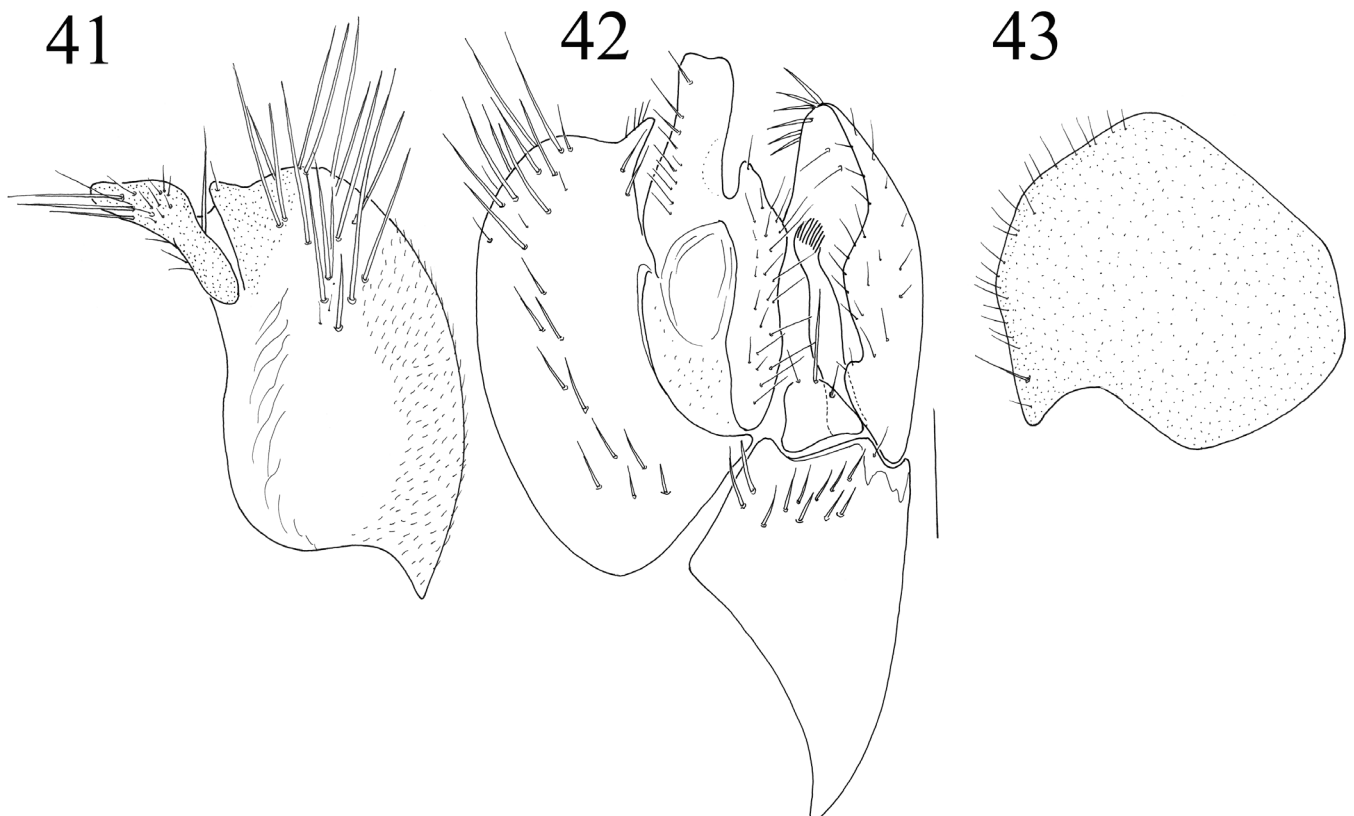
**Distribution.** Singapore.

**Remarks.** *Elaphropeza singulata* was described from 5 females found in Sime forest, Bukit Timah, and Nee Soon. All these localities are terrestrial forests while the male described here for the first time is from a mangrove. There is of course no guarantee that these females are conspecific





Fig. 40. *Elaphropeza singulata* Shamshev & Grootaert, 2007 male habitus lateral. Genitalia removed and illustrated in Figs. 41–43.



Figs. 41–43. *Elaphropeza singulata* Shamshev & Grootaert, 2007. 41, right epandrial lamella, lateral view; 42, epandrium with cerci, dorsal view; 43, left surstylus, lateral view. Scale bar = 0.1 mm.

with the male, but will have to wait for more genetic evidence from freshly collected material in the terrestrial forests.

### Genus *Stilpon* Loew, 1859

*Agatachys* Meigen, 1830: 343 (as MS name "*Agatachys flavipes*" of Winthem). Type-species: *Tachydromia celeripes* Meigen, 1830 (= *T. graminum* Fallén, 1815) [designation by Coquillett, 1910: 504], by monotypy. Suppressed by the ICZN. (1997: 200 [Opinion 1881]), the history was laid out by Cumming & Evenhuis (1996).

*Stilpon* Loew, 1859: 34 (as subgenus of *Drapetis* Meigen). Type-species: *Tachydromia graminum* Fallén, 1815, by subsequent designation Loew, 1864: 5).

*Tetraneurella* Dahl, 1909: 362. Type-species: *T. beckeri* Dahl, 1909 [= *Stilpon graminum* (Fallén, 1815)], by monotypy.

*Pseudostilpon* Séguy, 1950: 83. Type-species: *Tachydromia paludosa* Perris, 1852, by original designation

### *Stilpon ubinensis*, new species (Figs. 44–47)

**Material examined.** Holotype male, Singapore, Pulau Ubin (Chek Jawa, type locality): 23 June 2012, PU1, Malaise trap in mangrove (reg. 29306, Ma7443).

**Etymology.** The epithet refers to the type locality Pulau Ubin.

**Diagnosis.** Species with yellow thorax, scutum with brownish yellow patch above wing base; legs entirely yellow; wing distinctly maculate, broadly brownish infuscate along  $R_{2+3}$  and  $CuA_1$  (except subapical part), haltere with black knob.

**Description.** Length: body 1.1 mm, wing 1.1 mm.

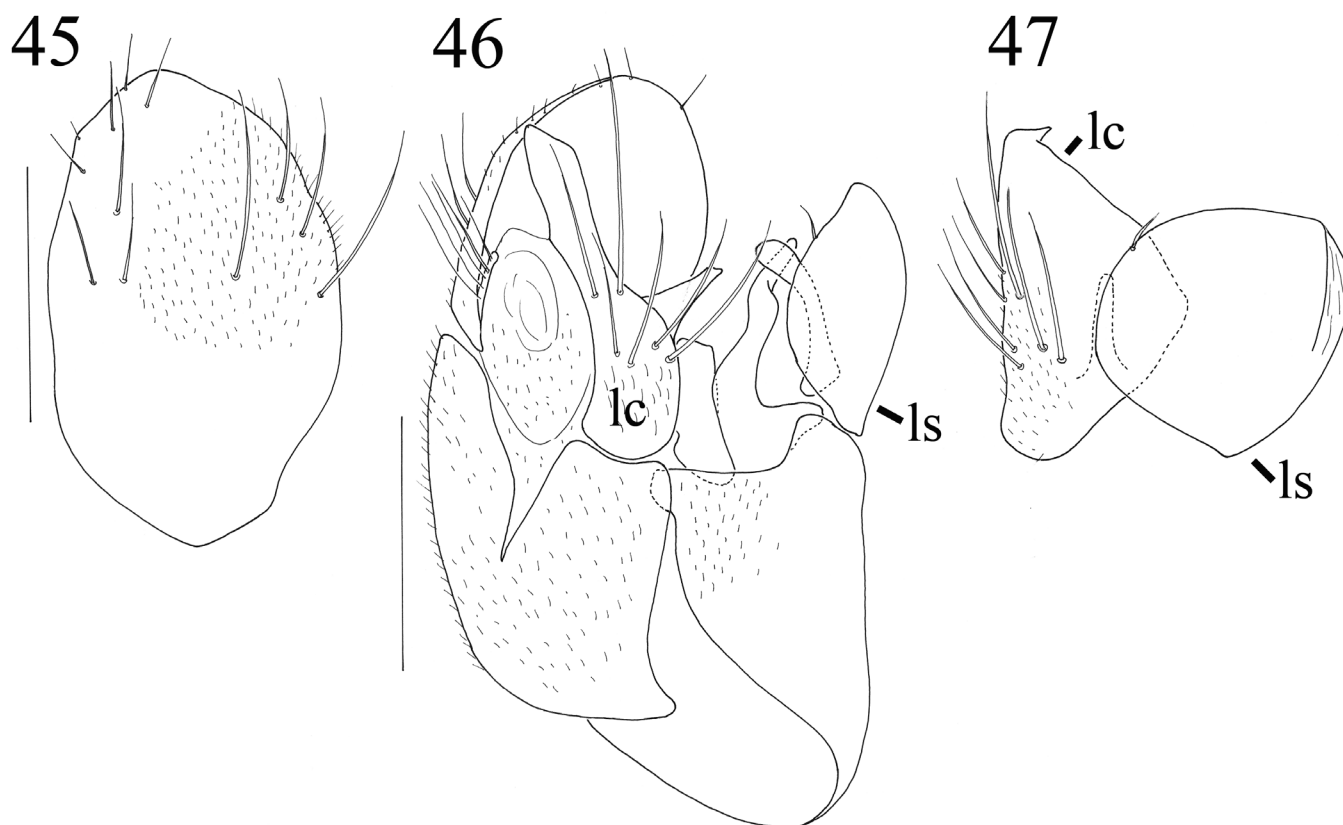
**Male:** Head black. Two minute fine vertical bristles present. Frons linear with sides nearly parallel, broad, entirely tomentose. Ocellar tubercle with minute setulae. Antenna with scape and pedicel yellowish brown, postpedicel yellow. Palpus yellow, with moderately long, yellowish subapical bristle.

Thorax yellow in ground-colour; scutum with brownish patch above wing base, scutellum and metanotum brownish yellow, sutures brownish in various extents. Postpronotal bristle minute. Acrostichals arranged in 2 irregular rows, hardly separated from dorsocentrals, complete posteriorly; dorsocentrals multiserial, more numerous anteriorly, uniform, complete posteriorly.

Legs entirely yellow. Coxae with unmodified setation; hind trochanter lacking spinules. Fore femur markedly thickened, with row of short yellowish anteroventral and row of minute posteroventral bristles. Fore tibia spindle-like, with



Fig. 44. *Stilpon ubinensis*, new species holotype male.



Figs. 45–47. *Stilpon ubinensis*, new species, male: 45, right epandrial lamella, lateral view; 46, epandrium with cerci, dorsal view; 47, left cercus and surstylus, lateral view. Scale bar = 0.1 mm.

unmodified setation. Mid femur slender, with 4 moderately long ventral bristles basally and 1 long, subapical bristle anteriorly. Mid tibia lacking ventral spinules and prominent bristles. Hind femur (viewed laterally) evenly thickened towards middle, with row of moderately long anteroventral bristles on about apical half, row of somewhat shorter anterodorsal bristles and some similar bristles dorsally. Hind tibia unmodified, with unmodified posterior apical comb. Fore and mid tarsi slender, hind tarsomere 1 slightly thickened.

Wing normally developed, covered with uniform microtrichia; distinctly maculate, broadly brownish infusate along  $R_{2+3}$  and  $CuA_1$  (except subapical part). Costal vein with short setulae along anterior margin.  $R_1$  (especially in meeting point with costa),  $R_{2+3}$ ,  $R_{4+5}$  and basal part of  $CuA_1$  thickened.  $R_{2+3}$  rather short, nearly 2.0 times as long as Rs, straight, meeting costa somewhat beyond wing midway. Distance between apices of  $R_{2+3}$  and  $R_{4+5}$  nearly 2.5 times longer than distance between apices of  $R_1$  and  $R_{2+3}$ .  $R_{4+5}$  evenly curved toward costa in apical part.  $R_{4+5}$  and  $M_{1+2}$  slightly divergent before wing apex. Haltere with deep black knob and yellow stem.

Abdomen. Tergite 1 pale yellow, remaining tergites brownish; tergites 1–2 unmodified. Segment 8 with 2 long and several short setae. Sternites brownish yellow, with scattered minute brownish setulae, sternites 2–5 divided along midline. Tergites 2–6 with darker lateral patches covered with microtrichia.

Terminalia brown (Figs. 45–47). Right epandrial lamella large, spoon-shaped, dorsally set with a few long setae (Fig.

45). Right cercus narrow with fine hairs. Left cercus larger, with a large ventral projection (Fig. 46); left cercus set with about 6 strong yellow bristles. Apex recurved, pointed (Fig. 47). Left surstylus round with a short seta on dorsal margin (Fig. 46), no other bristling.

Female: Unknown.

**Remarks.** *Stilpon ubinensis*, new species resembles very much *S. weilingae* Grootaert & Shamshev, 2012. In the key to *Stilpon* in the Tachydromiinae of Singapore (Grootaert & Shamshev, 2012) it leads to couplet 8 and to *S. weilingae*. Most external characters are identical but the male terminalia though similar are distinctly different. In *S. ubinensis*, new species, the right epandrial lamella is apically rounded and the left cercus is more pointed with a recurved tip and a large inner extension. In *S. weilingae* the right epandrial lamella is bifid and the left cercus has a different shape (figs. 232–235 in Grootaert & Shamshev, 2012).

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