

First report of wingless grass flies from China (Diptera: Chloropidae) with a key to the Chinese and Oriental species of *Elachiptera*

Первое сообщение о находке бескрылой злаковой мухи в Китае (Diptera: Chloropidae) с ключом для определения китайских и ориентальных видов *Elachiptera*

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A wingless species *Elachiptera viator* Nartshuk, 1971 in the family Chloropidae is recorded from China (Beijing) for the first time. A redescription of the species is given with the figures of its characteristics and the genitalia of both sexes. A checklist of seven species of the genus *Elachiptera* known from China with their distribution and a key to the Chinese and Oriental species of the genus are given. The following new combinations are proposed: *Lasiochaeta bengalensis* (Cherian, 1975), **comb. nov.**, *L. longicosta* (Cherian, 1975), **comb. nov.**, *L. luteopilosa* (Cherian, 1975), **comb. nov.**, and *Disciphus indica* (Cherian, 1975), **comb. nov.**

Бескрылый вид *Elachiptera viator* Nartshuk, 1971 из семейства злаковых мух (Chloropidae) впервые найден в Китае (Пекин). Дано переописание вида и иллюстрации признаков, в том числе генитальных структур обоих полов. Приведен список семи видов рода, известных в Китае, с данными об их общем распространении, и составлен ключ для определения китайских и ориентальных видов рода. Предложены следующие новые комбинации: *Lasiochaeta bengalensis* (Cherian, 1975), **comb. nov.**, *L. longicosta* (Cherian, 1975), **comb. nov.**, *L. luteopilosa* (Cherian, 1975), **comb. nov.**, и *Disciphus indica* (Cherian, 1975), **comb. nov.**

Key words: grass flies, China, Oriental Region, key, redescription, Diptera, Chloropidae, *Elachiptera*, new records, new combinations

Ключевые слова: злаковые мухи, Китай, ориентальная область, определительная таблица, переописание, Diptera, Chloropidae, *Elachiptera*, новые находки, новые комбинации

INTRODUCTION

Adult Chloropidae, commonly called grass flies, are small to medium-sized flies (0.5–7.0 mm), rather smooth, black or yellow with black to brown stripes and maculae; the wing is usually hyaline, with dark

patterns in a few species; rarely absent or reduced. Wingless or brachypterous grass flies are mainly known within the genera *Aphanotrigonum* Duda, 1932, *Conioscinella* Duda, 1929, *Elachiptera* Macquart, 1835, *Tricimba* Lioy, 1864 and *Lasiosina* Becker, 1910 (Ismay & Nartshuk, 1998), and also in *Alombus* Becker, 1914, *Chlorops* Meigen, 1803 and *Diplotoxa* Loew, 1863 (Nartshuk & Tschirnhaus, 2012).

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The genus *Elachiptera* belongs to the *Elachiptera* genus-group in the subfamily Oscinellinae (Andersson, 1977). It is a fairly large genus with 81 known species and is widespread in most geographical regions (Tschirnhaus, 2017). The majority of the described species of *Elachiptera* are Holarctic, with 52 species recorded, namely 26 recorded from the Nearctic (Sabrosky, 1948, 1965; Sabrosky & Valley, 1987; Wheeler, 2003; Wheeler & Forrest, 2002), and 26 from the Palaearctic (Kanmiya, 1981; Nartshuk, 1984, 2003, 2009; Beschovski & Krusteva, 1998); 10 species are known from the Oriental Region (Sabrosky, 1977; Cherian, 1975, 2012, 2014), 16 species from the Neotropical (Sabrosky & Paganelli, 1984; Wheeler & Forrest 2002; Mlynarek & Wheeler, 2008), and 14 species from the Afrotropical Region (Sabrosky, 1980; Deeming & Al Dhafer, 2012). At present, six species are known from China (Yang & Yang, 1991, 1998*).

Four species with reduced wings are known in the genus *Elachiptera* including an undescribed species from the Kilimanjaro Mountain in Tanzania (Nartshuk & Tschirnhaus, 2012). The European species *E. brevipennis* (Meigen, 1830) is characterized by polymorphism in the development of the wing; Nartshuk & Tschirnhaus (2012) published the photographs of two alive individuals. Wheeler (2003) described *E. aquila* Wheeler, 2003, a brachypterous species from Canada. Only the wingless form of *E. viator* Nartshuk, 1971 is known. *Elachiptera* species usually occur in wetlands, but also in agricultural fields with cultivated cereals. The larvae are phytosaprophagous, developing in rotting tissues of plants, usually damaged by other insects.

A wingless species *Elachiptera viator* Nartshuk, 1971 was originally described from the Primorie Territory of Russia and eastern Mongolia. In this paper, we record *E. viator* for the first time from China, re-describe and illustrate this species in detail

based on the Chinese material. A list of *Elachiptera* species known from China and a key to the known species of *Elachiptera* from China and the Oriental Region are given, as well as some new combinations of species previously treated in the genus *Elachiptera*.

MATERIAL AND METHODS

Specimens were examined and illustrated with a ZEISS Stemi 2000-c stereomicroscope and camera. Preparations of the genitalia were made by macerating the apical portion of the abdomen in warm 10% NaOH for 17–20 minutes. After examination, they were transferred to glycerin and stored in a microvial pinned below the specimen. The specimens are deposited at the Entomological Museum of China Agricultural University (CAU), in Beijing.

The following abbreviations are used: *a pa* – anterior postalar seta(e), *ap sc* – apical scutellar seta(e), *dc* – dorsocentral seta(e), *npl* – notopleural seta(e), *oc* – ocellar seta(e), *orb* – orbital seta(e), *poc* – post-ocellar seta(e), *p pa* – posterior postalar seta(e), *vte* – outer vertical seta(e), *vti* – inner vertical seta(e).

TAXONOMIC PART

ORDER DIPTERA

FAMILY CHLOROPIDAE

SUBFAMILY OSCINELLINAE

Genus *Elachiptera* Macquart, 1835

Type species: *Chlorops brevipennis* Meigen, 1830

Diagnosis. Small flies (body length 1.5–2.5 mm) with body black or yellow. Wing transparent with costal vein reaching M_{1+2} or wing reduced. Postpedicel (1st flagellomere) oval or reniform; arista thickened, strap-like; among orbital setae, one or two long. Ocellar triangle shiny, without dust.

*According to Pont & Xue (2007), Yang & Yang's "Flies of China" was published in May 1998 (and not in 1996); 1996 means the copyright date only.



Figs 1–2. *Elachiptera viator*, male. 1, body, dorsal view; 2, body, lateral view. Scale bar: 0.5 mm.

Scutellum trapezoidal, flattened, with 1–3 pairs of scutellar setae on small, medium-sized or finger-like tubercles. Notopleural setae 1+1. In the male genitalia, postgonites widened and triangular.

Elachiptera viator Nartshuk, 1971
(Figs 1–9)

Material. 1 male, 1 female, **China**, Beijing, Yanqing, Sihai, 9.IX.2009, Junchao Wang leg.

Description. Male. Body length 2.1 mm.

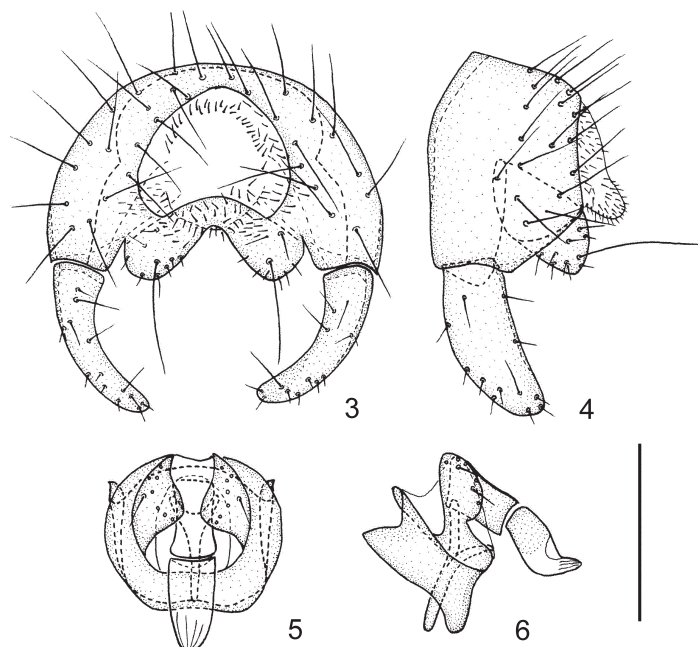
Head yellow, 0.9 times as long as deep, 1.2 times as wide as thorax; frons 0.8 times as long as wide, projecting slightly in front of eye; gena narrow, 0.5 times as wide as postpedicel (1st flagellomere); parafacialia indistinct. Ocellar triangle yellow, smooth, shiny, reaching anterior margin of frons, with pointed apex; ocellar tubercle light yellowish brown. Cephalic setae and setulae brown; two *orb* developed; *poc* slightly longer than *oc*; *vti* hair-like; *vte* developed, as long as *poc*; *vte* 3 times as long as *vti*. Antenna yellow except for dorsodistal mar-

gin of postpedicel black, microtomentose; postpedicel 1.5 times as wide as long; arista brown with short brown setulae. Proboscis and palpus yellow with yellow setulae.

Thorax yellow, smooth, shiny. Scutum 0.9 times as long as wide. Thoracic pleura shiny. Postscutellum yellow. Scutellum yellow except for lateral and distal margins yellowish brown, 0.5 times as long as wide; trapezoidal, flattened, with two pairs of scutellar setae on small tubercles, the apical tubercles nearly as long as wide; *ap sc* twice as long as scutellum. Setae and setulae on thorax brown; *npl* 1+1, distinct; *a pa* developed, as long as *npl*; *p pa* hair-like, *a pa* three times as long as *p pa*; one *dc* developed, as long as *a pa*. Legs yellow except for fore tibia brown with basal portion yellow and fore tarsus yellowish brown. Hind tibia with short oval tibial organ. Setulae on legs brown.

Wing and halter absent.

Abdomen brown, tergites 1+2 (fused) yellow except for distal portion slightly yellowish brown; ventral parts of abdomen yellow. Setulae on abdomen brown.



Figs 3–6. *Elachiptera viator*, male. **3**, epandrium, posterior view; **4**, epandrium, lateral view; **5**, hypandrium and phallic complex, ventral view; **6**, hypandrium and phallic complex, lateral view. Scale bar: 0.1 mm.

Male genitalia (Figs 3–6). Epandrium yellow, short tubular; surstylus simple, almost parallel-sided, with a rounded distal apex, in profile shorter than width of epandrium. Cerci short, separate, gap widely incised ventromedially. Postgonite roughly triangular, with a narrow inner distal apex; basiphallus cylindrical, longer than wide. Hypandrium closed dorsally.

Female. Similar to male. Body length 2.7 mm.

Female genitalia (Figs 7–9): Tergite 9 nearly pentagonal, longer than wide, with two long setae; sternite 9 short, apically rounded and with long stout setae. Cercus short and stout, with some long setae.

Distribution. Eastern Palaearctic: China (Beijing), eastern Mongolia, Russia (Primorie Territory). The species is recorded for the first time from China.

A KEY TO THE CHINESE AND ORIENTAL SPECIES OF *ELACHIPTERA*

Some Oriental species described or previously considered in *Elachiptera* apparently do not belong to this genus and are

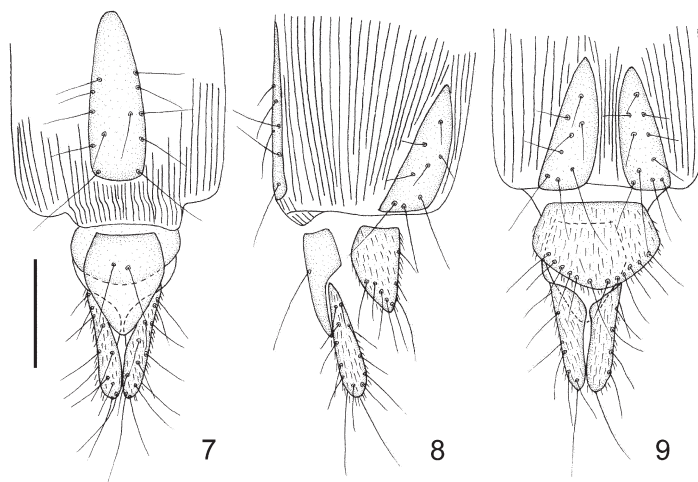
not included in the key. Below, we briefly consider these species. Tschirnhaus (2017) provides a review of all species formerly included in the genus *Elachiptera*.

Sabrosky (1977) listed five species of the genus *Elachiptera* from the Oriental Region. He recorded *E. brevipennis* (Meigen, 1830) from Taiwan (“Formosa” in the text), probably following Hennig (1941). Kanmiya (1983: 74) considered *E. brevipennis* sensu Hennig (1941) to be *Togeciphus katoii* Nishijima, 1954 on the basis of the specimen determined by Th. Becker. Hennig (1941) mentioned Becker as the identifier. Thus, *E. brevipennis* should be removed from the list of Oriental species.

Elachiptera lividipennis Duda, 1934 described from Sumatra has a long thin arista and the scutellum lacking tubercles from which the apical setae arise. Duda (1934: 71) believed that this species should be placed not in *Elachiptera* but between the genera *Gaurax* Loew, 1863 and *Gampsocera* Schiner, 1862.

Cherian (1975) described six new species of *Elachiptera* from India and included in his key *E. indistincta* Becker, 1911 described in the genus *Gampsocera*. Sabrosky

Figs 7–9. *Elachiptera viator*, female. **7**, abdominal terminalia, dorsal view; **8**, abdominal terminalia, lateral view; **9**, abdominal terminalia, ventral view. Scale bar: 0.1 mm.



(1977) has listed this species in the subgenus *Melanochaeta* Bezzi, 1906 (now considered a synonym of the genus *Oscinella* Becker, 1909: see Nartshuk & Tschirnhaus, 2012), taking into account that its scutellum is of the *Oscinella*-type, without tubercles. The species *E. longicosta* Cherian, 1975, *E. bengalensis* Cherian, 1975 and *E. luteopilosa* Cherian, 1975 have the scutellum of the same type and possess 1+2 notopleural setae. Based on these characters, we consider that these species belong to the genus *Lasiochaeta* Corti, 1909: *L. bengalensis* (Cherian, 1975), **comb. nov.**, *L. longicosta* (Cherian, 1975), **comb. nov.**, and *L. luteopilosa* (Cherian, 1975), **comb. nov.**

One more of the Cherian's species, *E. indica* Cherian, 1975, in our opinion should be placed in the genus *Disciphus* Becker, 1911 (*Disciphus indica* (Cherian, 1975), **comb. nov.**) as having a long arista, slender finger-like tubercles on the scutellum and the wing with dark maculae. These characters are typical for the genus *Disciphus*.

Therefore we do not include all the above-listed species in the key.

The key includes nine species. Seven of them are known from China, including one Oriental species (*E. popovi* Nartshuk, 1962), four species known from both the Palearctic and Oriental parts of China, and two species known from Palearctic China (*E. viator* Nartshuk, 1971 and *E. xizangen-*

sis Yang et Yang, 1991). Two more Oriental species included are described and known only from India, *E. assamensis* Cherian, 1975 from Assam and *E. octoseta* Cherian, 1975 from West Bengal.

1. Wing absent *E. viator*
- Wing normally developed 2
2. Scutellum with finger-like projections from which the apical setae arise; two apical projections equal to one-fourth of scutellum length *E. octoseta*
- Scutellum with small tubercles from which the apical setae arise 3
3. Scutum entirely black 4
- Scutum yellow, with black stripes broad or narrow; at least humerus (postpronotal lobe) yellow 7
4. Ocellar triangle black; thoracic pleura entirely black 5
- Ocellar triangle yellow; thoracic pleura yellow, with katepimeron black *E. popovi*
5. Scutellum with 3 pairs of tubercles, the apical pair well developed, at least twice as long as wide; legs entirely yellow or brownish yellow 6
- Scutellum with 2 pairs of small tubercles; legs yellow except for hind femur and tibia black *E. cornuta*
6. Scutum dusted. Palpi yellow *E. tuberculifera*
- Scutum shiny, clothed with white pubescence. Palpi black *E. assamensis*
7. Scutellum yellowish brown, with one pair of small tubercles *E. xizangensis*
- Scutellum black, with 2–3 pairs of tubercles 8

8. Scutellum with 3 pairs of tubercles, the apical pair well developed, at least twice as long as wide; *ap sc* slightly shorter than length of scutellum ***E. sibirica***
 – Scutellum with 2 pairs of small tubercles, the apical pair nearly as long as wide; *ap sc* slightly longer than length of scutellum ***E. insignis***

CHECKLIST OF ELACHIPTERA FROM CHINA

E. cornuta (Fallén, 1820)

Oscinis cornuta Fallén, 1820: 6; *Chlorops femoralis* Meigen, 1838: 138; *Crassiseta annulipes* Roser, 1840: 63; *Crassiseta flaviventris* Roser, 1840: 63; *Crassiseta fuscipes* Roser, 1840: 63; *Elachiptera nigripes* Strobl, 1894: 199; *Elachiptera nigromaculata* Strobl, 1894: 199; *Elachiptera cornuta* var. *nuda* Duda, 1932: 32.

Distribution. Transpalearctic and Oriental. Asia: China, Kazakhstan, Mongolia; Russia (European and Asian parts); Europe: Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Latvia, Lithuania, Macedonia, Moldova, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine.

E. insignis (Thomson, 1869)

Oscinis insignis Thomson, 1869: 605; *Elachiptera nigroscutellata* auctt., nec Becker, 1911; *Elachiptera insignis* Becker, 1924: 120.

Distribution. East Palearctic and Oriental. China (Hubei, Sichuan, Fujian, Taiwan), Japan (from Hokkaido to Ryukyu [= Nansei] Islands), Russia (Far East: Amur Province, Khabarovsk and Primorie territories, Sakhalin, southern Kuril Islands). The species is recorded for the first time from the Russian Far East.

E. popovi Nartshuk, 1962

Elachiptera popovi Nartshuk, 1962: 676.

Distribution. Oriental China (Yunnan).

E. sibirica (Loew, 1858)

Crassiseta sibirica Loew, 1858: 73; *Elachiptera nigroscutellata* Becker, 1911: 99; *Elachiptera sibirica*: Duda, 1932: 32.

Distribution. Widely Palearctic and Oriental. Asia: China (Beijing, Yunnan, Fujian, Taiwan), Japan (Hokkaido, Honshu, Kyushu, Shikoku, Tsushima Island), Kazakhstan, Korea, Mongolia, Russia (Asian parts east of Baikal), Saudi Arabia; Europe: Austria, Bulgaria, Czech Republic, France, Hungary, Italy, Romania, Slovakia, Switzerland, Ukraine.

E. tuberculifera (Corti, 1909)

Crassiseta tuberculifera Corti, 1909: 132; *Elachiptera tuberculifera*: Becker, 1916: 425.

Distribution. Transpalearctic and Oriental. Asia: China (Beijing, Xinjiang, Ningxia, Shaanxi), Japan (Hokkaido, Honshu), Kazakhstan, Mongolia; Russia (European and Asian parts); Europe: Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Latvia, Lithuania, Macedonia, Moldova, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine.

E. viator Nartshuk, 1971

Elachiptera viator Nartshuk, 1971: 289.

Distribution. East Palearctic. China (Beijing), eastern Mongolia, Russia (Far East: Primorie Territory).

E. xizangensis Yang et Yang, 1991

Elachiptera xizangensis Yang et Yang, 1991: 473.

Distribution. Palearctic China (Tibet).
Note. The coordinates of the locus typicus (29°9'N 95°7'E, 3050 m) given in the original description are wrong: according to Google Earth, this point is deep in inaccessible forests at a much lower altitude, so the correct coordinates are about 95 km north-

east, at about 29°51'N 95°46'E at a similar altitude and close to the "Nyingchi Medicine Co. Bomi Drug Store" (Tschirnhaus, pers. comm.).

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