Grassflies of the family Chloropidae (Diptera) of A.P. Fedchenko’s Turkestan collection with description of new taxa

Злаковые мухи семейства Chloropidae (Diptera) из туркестанской коллекции А.П. Федченко с описанием новых таксонов

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Sixteen species are found in the chloropid collection made by A.P. Fedchenko in Turkestan in 1869–1871 and three more species were identified to the generic level only. A new genus, Alajichlorops, and four new species, A. fedchenkoi, Chlorops kirghisicus, Ch. olgafedchenkoae, and Polyodaspis palpata are described. A key for the palaearctic species of the genus Polyodaspis Duda, 1933 is presented.

INTRODUCTION

Chloropidae from Central Asia are insufficiently studied hitherto. Rather long ago Nartshuk (1966) gave a short review that included 76 species from 39 genera recorded from Kirghizia (now Kyrgyzstan), Tajikistan, Uzbekistan and southern Kazakhstan. Later, some new species were described and some species were recorded from this territory in other papers. They are included in the Catalogue of Palaearctic Diptera (Nartshuk, 1984).

Aleksey P. Fedchenko was the first Russian explorer who collected insects in Turkestan (partly coinciding with an area now commonly called Central Asia or Middle Asia) during his expedition in 1869–1871. Some groups of insects were examined soon after the expeditions and results were published. Hermann Loew and Aleksey P. Fedchenko were responsible for Diptera from Fedchenko’s expeditions (Leonov, 1972). Loew described some new species of flies, but did not include the Chloropidae. Aleksey P. Fedchenko published nothing because of his early death.

MATERIAL

Insects from the Turkestan collection done by Fedchenko are kept in the Zoological Museum of Moscow University in Moscow, Russia. The fly specimens in this collection are on pins with labels which are very peculiar: they are square and of different colour that refers to a month of collecting (lilac – April, pink – May, bluish
green – June, yellow – July, blue – August, orange – September); the day of the month is given in figures but the year is not being “coded” in the following way: no year means 1869, a black line in the lower part of the label – 1870, and a red line in the upper part of the label – 1871. A map of the routes of Fedchenko’s expedition was published by Leonov (1972). I found 59 specimens of undetermined Chloropidae flies within the Fedchenko’s collection. Three specimens from the collection were earlier included by me into the paratypes of two described species: two females of Xena straminea Nartshuk, 1964 and a female of Eutropha crocea Nartshuk, 1973 (Nartshuk, 1964, 1973).

A list of other species and descriptions of new taxa are given in the present paper. Some specimens of Chlorops kirghisicus sp. nov., collected by the author in Kirghizia in 1963 were used for the description, too. Most specimens are kept in the collection of the Zoological Museum of Moscow University in Moscow (ZMUM), and a part in the Zoological Institute (formerly Zoological Museum), Russian Academy of Sciences in St Petersburg (ZIN). Places of deposition of holotypes and paratypes of new taxa are listed below for each new species.

**ANOTATED LIST OF SPECIES AND DESCRIPTIONS OF NEW TAXA**

Order DIPTERA

Family CHLOROPIDAE

Subfamily OSCINELLINAE

**Aphanotrigonum** sp.

Chardara, 25 June1871, one female.

A small specimen (sex unknown) belonging to the group of *A. cinctellum* Zetterstedt, 1848.

**Conioscinella** sp.

Jagnob, 21 June1869, one male.

Dark-coloured specimen; more specimens are needed for a correct identification of the species.

**Dicraeus bothriochloae** Nartshuk, 1978

Osh, 6 Aug. 1871, one male.

*Distribution*. Central Asia (Tadjikistan, Turkmenia). The first record from Kyrgyzstan. Recently Deeming (2011) recorded this species for UAE: very lightly coloured specimens were collected on grasses Pennisetum and on flowering Saccharum griffithii. However Deeming (2011: 789) mentioned that “the identification must remain tentative”.

Larvae develop in unripe seeds of *Botriochloa ischaemum* (L.) Kend. (Poaceae).

**Dicraeus ingratus** (Loew, 1866)

Jagnob, 21 June1869, one male.

*Distribution*. The species is widely distributed, known from Europe to Kazakhstan, West Siberia, Israel and in North America.

Larvae develop in unripe seeds of Bromopsis sp. (Poaceae).

**Elachiptera rufifrons** Duda, 1932

Samarkand, 4 April 1869, one male.

*Distribution*. From South Europe and North Africa to Israel and Central Asia.

Larvae of the species are considered to be a pest of rice shoots in Spain (Sevilla) (Batella, 1978).

**Polyodaspis palpata** sp. nov.

(Figs 1, 2)

_Holotype_, female, [Uzbekistan] Kysylkum, 29 June 1871, coll. Fedchenko, ZMUM.


*Description*. Body black, shining. Frons nearly square, dark brown. Ocellar triangle black, nearly reaching anterior margin of frons, greatly narrowing anteriorly, its surface not smooth. A brownish keel absolutely separates the antennal foveae, keel equals a triangle above and is linear anteriorly. The brownish postpedicel is not of a discoidal form, as usual in many spe-
cies of the family, but onion-shaped. Arista very thin, bare, longer than the frons. Gena wide, greatly protruding. Eyes bare, round. Palpi stout, brownish, expanded over the edge of the oral cavity. Probscos long geographic. Chaelotaxy: orbital setae small and not distinguished from interfrontal hairs. Postocellar setae longer than exterior and inner verticals. All setae and hairs of head whitish.

Scutum and scutellum evenly covered with whitish hairs. Notopleural setae 1+1, of head whitish. Prothorax and inner verticals. All setae and hairs hairs. Postocellar setae longer than external and not distinguished from interfrontal hairs.

Comparative Remarks. The species is similar to *P. sulcicollis* (Meigen, 1839) and *P. laevicollis* (Becker, 1913) concerning its wing venation with a narrow first basal cell and strongly protruded gena. From the widely distributed *P. ruficornis* (Macquart, 1835) the new species is distinguished by a narrow first basal cell and the absence of many lateral setae on the scutellum. The onion-shaped postpedicel, thin and long arista and thick palpi expanded from the oral cavity in female distinguish the new species from the known Palaearctic species of the genus. *Lasiambia picardi* (Séguy, 1964) from Nice (France) described in the genus *Polyodaspis* Duda, 1933 (Séguy, 1946), belongs to another genus. Becker (1913) described *Siphonella laevicola* from Beluzhistan (Iran) and compared it with *Polyodaspis ruficornis* (Macquart, 1835) and *Lasiambia parallela* (Becker, 1910) [as *Siphonella parallela*], although he had two specimens of *Polyodaspis sulcicollis* (Meigen, 1838) in the same collection from Iran. Holotype, a female with a label saying “P. Beluzhistan, 13 Febrar 1901 [Zarudny]” is deposited in ZIN collection. I examined it and could not distinguish it from a dark specimens of the variable *P. sulcicollis*. Halteres of holotype of *P. laevicola* are yellow, not “braunschwarz” as Becker (1913) stated. Two specimens of *P. sulcicollis* from Iran were identified by Becker and labeled as “Chorassan [Umgebung von Dys] 15–17 July1901 [Zarudny]”. These specimens are smaller than the holotype of *P. laevicola* and its gena and legs are slightly paler. To solve the question about the synonymy an additional material is needed, especially a dark coloured male from Iran in order to examine male genitalia. However, it is worth mentioning that the *P. laevicola* holotype was collected in Iran in February while both specimens of *P. sulcicollis* flew in July.

**Key to Palaearctic species of the genus Polyodaspis**

1. First basal cell wide in the middle. Scutellum with many setae on lateral edge .............. 2
   - First basal cell not widened. Scutellum with usual lateral setae ................. 3
   - Surface of frons with a swelling before ocellar triangle. Postocellar setae slightly convergent. Europa (Hungary) .................. ............... *P. conoea* Ismay et Schulten, 2003 (only female known)
3. Postpedicel onion-shaped, arista longer than frons. Central Asia ........ *P. palpata* sp. nov.
   - Postpedicel not so thick, shorter than high .............. 4
4. Ocellar triangle smooth and shining. Body length 1.5 mm. Abdomen without membranous vesicae, and male genitalia as in Figs 3 and 4. Kazakhstan .................. ............... *P. parae* Nartshuk, 1964
   - Ocellar triangle punctate, not smooth. Body length 2 mm. Abdomen with membranous vesicae, usually situated inside abdomen (Fig. 5). Palaearctic Region ............ ............... *P. sulcicollis* (Meigen, 1838)
Trachysiphonella carinifacies
Nartshuk, 1964

Iskander, 15 June 1871, one female.

Distribution. Switzerland, Kazakhstan, Tadjikistan, Mongolia, Tunisia, UAE.

Trachysiphonella ruficeps
(Macquart, 1835)

Uch Kurgan, 14 July 1871, one male, one female.

Distribution. The species was recorded earlier only from Europe.

Comparative Remarks. The examined specimens are pale coloured. There are several specific names for species of Trachysiphonella which are very variable in colour: ruficeps (Macquart, 1835), scutellata von Roser, 1840, pygmaea Meigen, 1838, flavel- la Zetterstedt, 1848, scutellata Zetterstedt, 1860, diplotoxoides Strobl, 1893, schineri Hendel, 1931. Attempts to distinguish some forms based on the structure of male genitalia (Karps, 1984) have not been successful as Michael von Tschinhaus confirmed (personal comm.). Resolving this complicated case is beyond the scope of this paper. I use the oldest name as probably three former names are synonyms.

Subfamily CHLOROPINAE

Alajichlorops gen. nov.

Diagnosis. This new genus is founded on structure characters of the head with wide and slightly swollen gena, venation of wing with short costal vein, which ends far before the wing tip, short radial veins, enlarged end of vein R\textsubscript{1} at its fusion with costal vein, structure of male genitalia with sclerotized surstyli, and transverse mesolobus without developed cerci.

Description. Body yellow with black marks: 5 stripes on scutum and 5 marks on pleuron: on propleuron, anepisternum, anepimeron, katepisternum and meron. Postpedicel round, arista thin, nearly bare. Eye oval with horizontal diameter longer than the perpendicular one. Height of gena as long as 4/5 of perpendicular diameter of eye. Proboscis short. Wing clear, costal vein ends at 2/3 of the wing length until the wing tip. Veins R\textsubscript{2+3} and R\textsubscript{4+5} short and curved. Break on costal vein and flexure of the M\textsubscript{2+4} exist, subcostal vein presented as a very short piece in 1/3 times shorter than humeral vein. Propleural seta black. Apical bristle at the end of mid or hind tibia and hind tibial organ are lacking.

Male genitalia: anterior lobe of surstylum black, strongly sclerotized, mesolobus transverse, gonites simple. Epandrium partly damaged, probably band-shaped sclerites lateral to the anus is lacking.

Type species: Alajichlorops fedchenkoi Nartshuk, sp. nov.

Etymology. The genus name is composed from two words: Alaj Mountains, the type locality, and Chlorops – generic name in Chloropidae meaning “green eye”. Gender masculine.

Comparative Remarks. The genus Alajichlorops may be included in the keys of Andersson (1977) and Ismay & Nartshuk (2000) in the following way: couplets 56 in Andersson and 7 in Ismay & Nartshuk must be reformulated as:

56 (in Andersson, 1977), 7 (in Ismay & Nartshuk, 2000). Frons produced at last half the length of an eye. Head in lateral view more or less triangular, or anepisternum and anepimeron with setulae.

– Frons less produced or anepisternum and anepimeron without setulae.

In key of Andersson in couplet 27 Alajichlorops differs from Centorisoma Becker, 1910 by short round postpedicel with thin nearly bare arista, short costal vein, which ends on 2/3 of the wing length until the wing tip, short and curved veins R\textsubscript{2+3} and R\textsubscript{4+5} and transverse mesolobus in the male genitalia. In Centorisoma postpedicel longer than wide, arista thick pubescent, costal vein longer and veins R\textsubscript{2+3} and R\textsubscript{4+5} nearly straight, mesolobus longer than wide in the male genitalia. In key of Ismay & Nartshuk in couplet 87 Alajichlorops differs from
Chlorops Meigen, 1803 by short costal vein which ends on 2/3 of the wing length until the wing tip, short and curved veins $R_{2+3}$ and $R_{4+5}$, transverse mesolobus, long posterior lobes of surstyli and fused pre- and postgonites. In Chlorops costal vein longer, veins $R_{2+3}$ and $R_{4+5}$ straight, mesolobus small triangular or around, posterior lobes of surstyli small, and pre- and postgonites are separated and parallel.
**Alajichlorops fedchenkoi** sp. nov. (Figs 6–9)

*Holotype*: male, [Kyrgyzstan], Alaj Mt., 23 Aug. 1871, coll. Fedchenko, ZMUM.

*Paratype*: 1 male, [Kyrgyzstan], Alaj Mt., 22 Aug. 1871, coll. Fedchenko, ZIN. The paratype is lightly damaged: one antenna, fore legs except coxae, middle legs except femur, and a hind leg and tarsus of another hind leg are broken. Tip of both wings are broken, epandrium partly damaged.

Alaj Mountains is a mountain ridge, situated in the east of Zaravshan Mountain Ridge, on the border between Tajikistan and Kyrgyzstan.


Male genitalia (Figs 10, 11): epandrium with long sclerotized surstyli, hypandrium common for the genus with two parallel gonites.

**Chlorops kirghicus** sp. nov. (Figs. 10, 11)


*Paratypes*: 9 males and 8 females with the same label as holotype; ZIN; 2 females, Uzbekistan, Khodzha-Chiburgan, 21 and 26 June1871, coll. A.P. Fedchenko; 1 male, [Kyrgyzstan?] Kchi Alaj, 27 July1871 (A.P. Fedchenko). 1 male, [Tajikistan] Iskander, 15 June1870, A.P. Fedchenko, all in ZMUM.

*Description*. Body yellow with black stripes on scutum. Frons nearly square, yellow with black setae and setulae. Ocellar triangle extends to half of frons and continues as narrow line to front of frons, entirely black or with narrow yellow sides.


Stripes of scutum black, dusted. Scutellum yellow. Spot on anepisternum small, black and shining, spot on katepisternum yellow in 3 specimens (holotype and 2 paratypes) and black in a female from Chiburgan. Propleura without black mark. Abdomen dark brown dorsally. Wing clear with venation typical for the genus. Halteres white. Legs yellow with darkened tarsi. Male genitalia (Figs 10, 11): epandrium with long sclerotized surstyli, hypandrium common for the genus with two parallel gonites.

**Comparative Remarks**. The new species is similar to *Ch. serenus* Loew, 1866 in appearance, with wide gena, black postpedicel and yellow basal segments of antenna, number and colour marks on pleura. It differs by a white arista, dark stripe on occiput, dark coloured abdomen and structure of male genitalia. The new species has long sclerotized surstyli. New species runs to the couplet 18 (17) in the *Chlorops*-key of the Palaearctic species by Smirnov & Fedosev.
eva (1977), it differs from Ch. persicus Duda by form and darker colour of ocellar triangle and structure of male genitalia.

**Chlorops olgafedchenkoae** sp. nov.  
(Fig. 12)

*Holotype:* male, [Kyrgyzstan?] Alaj Mt., 22.07.1871, coll. A.P. Fedchenko, ZMUM.  
*Paratypes:* 1 male, Uzbekistan, Uch-Kurgan, 15 July 1871; 1 male, Tajikistan, Iskander, 16 June 1870; 2 males, Kyrgyzstan, Taka, 8 Aug. 1871; 1 female, Kyrgyzstan, Shakhimardan, 8 July 1871; 2 females, Kyrgyzstan, Osh, 2 Aug. 1871; 1 female, Kyrgyzstan, Mody, [12 verst from Osh] 7 Aug. 1871; 1 female, [Uzbekistan] Zeravshan Valley, 25 June 1869. All collected by Fedchenko and deposited in ZMUM, except for 2 males from Taka and 1 female from Mody, which are in ZIN.

*Description.* Body yellow with black marks. Frons nearly square with black setulae. Ocellar triangle extends to front of frons only as a strongly narrowed line. Black spot occupies the ocellar tubercle and fore part of triangle, leaving hind corners yellow. The anterior black spot sometimes reduces to a small oval mark. Occiput with black stripe, widened below. Outer and inner verticals and postocellars are equal, postocellars are situated outside of hind ocelli. Gena nearly as wide as height of postpedicel, wider than parafacialia. Postpedicel round and black, arista white with yellowish base. Basal antennal segments yellow. Palpi black on 2/3 of their length.

Scutum longer than wide with 5 black dusted stripes, middle stripe does not extend scutellum.

However, diffuse darkening in front of scutellum, extending on the scutellum as well. Postpronotum with black mark. Pleura with black marks below the anterior stigma, on anepisternum, katepisternum and meron. A female has not a black, but a dark yellow spot on the katepisternum. Metanotum black and dusted. Abdomen yellow with black transverse bands on anterior part of tergites.

Wings clear, venation typical for the genus. Legs yellow, fore tarsus slightly darkened. Male genitalia as in fig. 12.

_Figs 10–12._ Male genitalia in Chlorops species. Ch. kirghisicus sp. nov.: 10, epandrium, 11, hypandrium; Ch. olgafedchenkoae sp. nov.: 12, epandrium and hypandrium.
Body length 3.5 mm.

*Etymology.* Species is named in the memory of Olga Aleksandrovna Fedchenko, a wife and a colleague of Aleksey Pavlovich Fedchenko, who also took part in the Turkestan Expedition.

*Comparative Remarks.* The new species belongs to the group of species with dark coloured palpi. The group includes some few species only. The species is similar to *Ch. zernyi* Duda, 1933 by its white arista and black palpi. It is distinguished by the form of its head which is not elongated as in *Ch. zernyi*, dark coloured katepisternal spot, black mark on propleuron below anterior stigma and structure of male genitalia. Palpi in *Ch. zernyi* are black only on tip, in the new species palpi are black on 2/3 of their length. Moreover there are some small differences in the structure of male genitalia. New species runs to the couplet 15 (16) in the *Chlorops*-key of the Palaearctic species by Smirnov & Fedoseeva (1977), differences from *Ch. zernyi* are listed above.

**Chlorops novakii** Strobl, 1902

Kosaral, 24 June 1871, one male, one female; Katta-Kurgan, 6 Apr. 1869, one male, one female.

*Distribution.* From Europe to Russian Far East and Mongolia. In East Europe, absent in the north of Lithuania and Belorussia.

*Note.* Specimens of very light colour, postpedicel yellow with small darkened part above, ocellar triangle yellow, only ocellar tubercle and a central line are black.

**Chlorops persicus** (Duda, 1933)

Gulcha, 9 and 10 Aug. 1871, 3 females; Alaj Mt., 21 and 22 July 1871, one male, two females; Majrakum, 4 Apr. 1871, one female.

*Distribution.* Transcaucasia, Central Asia (Uzbekistan, Tajikistan, Turkmenistan), Iran, Afghanistan.

**Chlorops sp.**

Iskander, 15 June 1869, one male (without antennae), one female.

**Eutropha crocea** Nartshuk, 1973

Nartshuk, 1973: 224 (Chardara, on Syr Darya River, 27 June 1871, one female para-type).

*Distribution.* South Kazakhstan, Uzbekistan, western Mongolia.

**Meromyza conifera** Fedoseeva, 1971

Zaravshan Valley, 1 May 1869, two males.

*Distribution.* Central Asia (Uzbekistan, Tajikistan), western Mongolia.

**Meromyza nigriventris** Macquart, 1835

Pyandzhikent, 28 June 1871, two males; Gulcha, no data, one male.

*Distribution.* Holarctic species, widely distributed in the Palearctic from Europe to Japan, China, Iran, Mongolia. North America.

**Meromyza pluriseta** Péterfi, 1961

Alaj Mt., 11 and 22 July 1870, two males; Fan, 23 June 1869, one male; Karasuk, 11 July 1870, one male.

*Distribution.* From Europe to East Siberia and Mongolia.

**Meromyza saltatrix** (Linnaeus, 1761)

Iskander, 15 June 1869, one male; Varsaminor, 11 June 1869, 2 males; Fan, 19 June 1869, one male.

*Distribution.* Holarctic species, widely distributed in the Palearctic from Europe to Russian Far East and China. Within the Nearctic it is known only in Alaska.

Larvae are phytophagous, developing in shoots of many genera of grasses (Poaceae).

**Meromyza sp.**

Uch-Kurgan, 15 Aug. 1874, one male.

A male with black tip of palpi and black stripes on scutum. Postgonites black and not identical with postgonites of any known species, but I abstain from describing a new species for an additional material is needed.
Xena straminea Nartshuk, 1964

Nartshuk, 1964: 316 [Kizylkum, 29 June 1871, one female; Chardara, on Syr-Darja, 25 June 1871, one female (paratypes); additional specimens: one male and two females from Tadjikistan, Langarkisht, southern Pamir Mts., 1 Aug. 1972 (coll. Tanasjitschuk)].

Distribution. The species is abundant in mountain regions of Switzerland (Dely-Draskovits et al., 1993), south-eastern part of European Russia (Orenburg Region), Kazakhstan, Uzbekistan.

Female with terminalia forming a shining yellow laterally flattened cutting ovipositor. Ovipositor of such a structure is rather rare in Chloropidae and occurs in some species of the unrelated genera Calamomcosis Enderlein, 1911, Opetiophora Loew, 1872, Dicraeus Loew, 1873 (all Osci- nellinae), Pseudopachychaeta Strobl, 1902, Sacatonia Sabrosky, 1967, and Cetema Hendel, 1907 (all Chloropinae).

CONCLUSIONS

A small collection of Chloropidae brought together by Fedchenko in Central Asia contains 16 species, among which a new genus Alajichlorops g. nov. and four new species A. fedchenkoi sp. nov., Chlorops kirghisicus sp. nov., Ch. olgafedchenkoae sp. nov., and Polyodaspis palpata sp. nov. are described in the present paper. The genus Xena Nartshuk, 1964 and two species X. straminea Nartshuk, 1964 and Eutropha crocea Nartshuk, 1973 were described already in the past, and paratypes of these species from the Fedchenko’s collection were designated already in that connection (Nartshuk, 1964, 1973). More than a half of the species, 9 out of 16, have a local Turanian distribution. The chloropid collection of Fedchenko contains only 59 specimens, however 8 new taxa were described from this material. This fact is an evidence of the diversity and peculiarity of the chloropid fauna of Central Asia.

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