

Review of the *Phaonia pallida* group (Diptera: Muscidae)

Обзор видов группы *Phaonia pallida* (Diptera: Muscidae)

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КЛЮЧЕВЫЕ СЛОВА: *Phaonia*, Muscidae, Diptera, Палеарктика.

ABSTRACT. New and detailed key for the *Phaonia pallida* group is offered. The variability of species of the *P. pallida* group is considered. Hitherto unknown female of *P. kowarzii* Schnabl, 1887 is described. The distribution of several species of the *P. pallida* group is specified.

РЕЗЮМЕ. Предложен новый и подробный ключ для видов группы *Phaonia pallida*. Рассмотрена вариабельность видов группы *P. pallida*. Описана неизвестная самка *P. kowarzii* Schnabl, 1887. Уточнено распространение рассмотренных видов.

Introduction

Hennig [1963] included in the *Phaonia pallida* group six Palaearctic species: *Phaonia pallida* Fabricius, 1787; *P. bitincta* Rondani, 1866; *P. kowarzii* Schnabl, 1887; *P. regalis* Stein, 1900; *P. rufiventris* Scopoli, 1763 (= *populi* Meigen, 1826) and *P. subventa* Harris, 1780 (= *variegata* Meigen, 1826).

Zinovjev [1981] added to the group *P. luteovittata* Shinonaga et Kano, 1971. In the present review we include one more species *P. rubriventris* Emden, 1965. The species was described from N Burma and N India from altitudes of 2000 m or more, it is the border between the Oriental and Palaearctic regions, this species is also recorded for China [Ma et al., 2002]. Thus, totally eight species are considered.

Chinese authors include in the *P. pallida* group six more species from mountainous localities in Chinese Sichuan and Guizhou provinces [Ma et al., 2002], namely: *P. brunneiabdomina* Xue et Cao, 1989; *P. fusciaurea* Xue et Feng, 1986; *P. lucidula* Fang et Fan, 1993; *P. luteovittatoida* Feng et Ma, 2002; *P. mengshanensis* Feng, 1993 and *P. subluteovittata* Ma et Deng, 2002. The short key for Chinese species available in English does not clarify enough the situation. Note also that these species are described from very limited series

or only from single holotype, so the variability is unknown. Therefore we do not consider those Chinese species in our paper.

The monophyly of the *P. pallida* group seems to us doubtful. Its only apomorphy is a yellow colour of the abdomen, while other characters are very diverse. We prefer to use generally accepted interpretation of the *P. pallida* group till molecular phylogenetic clarifies the relationship between species of *Phaonia* Robineau-Desvoidy, 1830.

The main task of the present review of the *P. pallida* group is to offer a completely new and detailed key and we hope that our colleagues will find it useful. We also characterize the variability and give direct comparison of two of the most common and at the same time the most variable species *P. rufiventris* and *P. subventa*. A hitherto unknown female of *P. kowarzii* is described. The distribution of several species of the *P. pallida* group in the eastern part of Palaearctic is specified. Some information on imaginal ecology of species of the group is given.

Material and methods

The specimens examined in this study are deposited in the following institutions:

BMNH — Natural History Museum, London, UK;
ISEA — Institute of Systematics and Ecology of Animals, Novosibirsk, Russia;

OUMNH — Oxford University Museum of Natural History, UK;

ZIN — Zoological Institute, St-Petersburg, Russia;
ZMUC — Zoological Museum, University of Copenhagen, Denmark;

ZMUM — Zoological Museum of Moscow University, Russia.

Localities are given as follows: country, region, geographical coordinates in the decimal degrees format.

The following generally accepted abbreviations for morphological structures are used: *fl*, *t1*, *f2*, *t2*, *f3*, *t3* = fore-, mid-, hind- femur or tibia respectively; *ac* — acrostichal setae; *dc* — dorsocentral setae; *a*, *p*, *d*, *v* = anterior, posterior, dorsal, ventral seta(e); *prst* — presutural, *post* — postsutural. YPT — yellow pan trap.

Taxonomical account

Phaonia bitincta Rondani, 1866

Figs 8–10.

Phaonia bitincta Rondani, 1866. Type locality: “in the hills of the Parma countryside” (Pont, 1986).

MATERIAL. RUSSIA, *Krasnodar* reg., S Ozereevka (44.68°N 37.63°E), 14.07.2001, K. Tomkovich, 1♂ (ZMUM); UKRAINE, *Kharkov* reg., V. Yaroshevsky, 1♀ (ZIN).

DISTRIBUTION. Europe, the easternmost known record is listed above: *Krasnodar* region, S Ozereevka (37.63°E).

DISCUSSION. *P. bitincta* is a rare European species. For example, Hennig [1963] had seen apart from the holotype only 2 specimens (collected by Paul Stein in Germany, Bad Kissingen). The only character used in Hennig’s [1963] key to separate *P. bitincta* from *P. subventa* was the length of the arisal hairs. The difference in the scutal pattern was firstly offered by d’Assis-Fonseca [1968]. Gregor et al. [2002] used the number of setae on *t2* and yellow pedicel in *P. bitincta* males. We found all these characters more or less useful, add several more and summarized them in the key given below. Considering that our material of *P. bitincta* is very limited, we asked Dr. Verner Michelsen, Denmark and Dr. Adrian Pont, UK to check the key characters against available material of *P. bitincta* in ZMUC and OUMNH respectively (there are 3 specimens in ZMUC collection: 1♂ from France, Alsace prov., 2♂♂ from Spain, Cuenca prov. and 2♀♀ from UK in OUMNH collection). Our colleagues kindly confirmed that the key characters works on their specimens too. The presence of the golden setae on the lower occiput in *P. bitincta* was reported by Dr. Michelsen (pers. com.).

Phaonia kowarzii Schnabl, 1887

Figs 11–12.

Phaonia kowarzii. Schnabl, 1887. Type locality: Belarus, Mogilev government (presently Vitebsk reg., Liozno dist., Zachernya vill. (54.92°N 30.77°E).

MATERIAL. Syntype, ♂ *Aricia kowarzii* Schnabl Conf. A. C. Pont 2000 (ZIN). RUSSIA: *Amur* reg.: Zeya env. (53.74°N 127.26°E), A. Shatalkin, 5.08.1981, 1♂; 19.07.1982, 1♂; 15.08.1982, 1♀ (all ZMUM); Tukuringra Range, upper reaches of Erakingra River, 54.1°N 126.9°E, 19.06.1957, A. Zinovjev, 1♀ (ZIN); *Khabarovsk* reg.: *Khabarovsk* env., 48.6°N 135.1°E, 2–13.06.2014, N. Vikhrev, 2♀♀ (ZMUM); *Bolshekhkhtsirsky* NP, 48.267°N 134.767°E, 100 m, 30.09–1.10.2011, V. Dubatolov, 1♀ (ISEA); *Sopka Dva Brata* (48.309°N 135.077°E), poplar forest, 26.07.1978, D. Kasparyan, 1♂, 1♀ (ZIN); *Krasnodar* reg.: *Agursky Canyon*, 43.549°N 39.814°E, 8–15.05.2018, E. Erofeeva, 2♂♂; *Moscow* reg.: *Ruza* env., 55.66°N 36.05°E, E. Erofeeva, 1–10.06.2016, 1♀; 1–10.06.2017, 4♂♂, 4♀♀; 11–20.06.2017, 61♂♂, 7♀♀; 21–30.06.2017, 19♂♂, 4♀♀; 1–10.07.2017, 1♀; 21–31.07.2017, 1♂; 1–10.08.2017, 25♂♂, 7♀♀; 11–20.08.2017, 16♂♂, 6♀♀; 21–31.08.2017, 8♂♂, 3♀♀; 1–10.09.2017, 2♂♂, 2♀♀; 11–20.09.2017, 1♀; *Dmitrov* distr., *Kostino* env. (56.31°N 37.75°E), N. Vikhrev, 9.06.2009, 1♀; 21.07.2009, 1♂; *Naro-Fominsk* env., 55.393°N 36.784°E, 12.07.2008, D. Gavryushin, 1♂ (all ZMUM); *Perm* reg., *Kungur, Uchleskhoz = Preduralie* NP (presently abolished), 57.36°N 57.14°E, A. Zinovjev, 24–30.06.1979, 2♂♂; 9.07.1979, 2♂♂ (all ZIN); *Primorsky* reg., *Kamenushka* env. (43.622°N 132.232°E), 7.06.1979, A. Zinovjev, 1♀; 12.08.1984, A. Shatalkin, 1♂; 14.06.1985, A. Ozerov, 1♂; *Lazovsky* NP., *Ta-Chingouz Bay* (43.02°N 134.12°E), 28.08.1948, V. Gussakovskiy,

1♀; *Khanka Lake*, 45.06°N 131.99°E, 15–19.06.2014, N. Vikhrev, 1♂ (all ZMUM); *Vladivostok, Sedanka*, 43.2°N 132.0°E, 1.06–17.07.1979, A. Zinovjev, 8♂♂, 7♀♀; *Anisimovka* env., 43.17°N 132.79°E, 17.06.1979, A. Zinovjev, 3♀♀ (all ZIN); *Sakhalin* reg.: *Kunashir* Isl., *Yuzhno-Kurilsk* env. (44.0°N 145.8°E), 4–7.07.1979, A. Zinovjev, 8♂♂, 2♀♀; *Sakhalin* Isl., 12 km S of *Kholmsk, Pravda* (46.94°N 142.01°E), 25.07.1971, E. Narchuk, 2♂♂ (all ZIN); *Zabaykalsky* reg., *Soktuy* env. (50.08°N 117.78°E), 19.07.1958, K. Grunin, 1♀ (ZIN).

DISTRIBUTION. From W Europe to Japan, but probably absent in Siberia. It seems that *P. kowarzii* prefers cool oceanic climate like that in Scandinavia or the Pacific Far East. This point of view is indirectly confirmed by our observations in *Moscow* region where only 3 specimens were collected in period 2008–2016, whereas the year 2017, with abnormally rainy and cold summer, provided a large series of *P. kowarzii*.

DESCRIPTION OF FEMALE. In contrast to an usual situation, females of *P. kowarzii* are less represented in ZMUM and ZIN collections than males.

A small *Phaonia* with body length 5.5–6.0 mm. *Head*. Eyes covered with short and sparse hairs. Frons broad, 1/3 head width, dark; without interfrontal setae. Fronto-orbital plates, parafacials, face and gena dark grey dusted. Fronto-orbital plates with 3–4 inclinate and 2 reclinate setae, outer rows with 4–6 short hairs. Pedicel and base of postpedicel dirty yellowish, the rest of postpedicel dark, sometimes antenna entirely dark. Arista yellow in basal 1/3, the rest dark; longest arisal hairs as long as or slightly longer than width of postpedicel. Mouthedge not protruding. Palpi yellow, at apex as wide as width of postpedicel. *Thorax*. Disc of scutum mostly black with a pair of submedian grey vittae inside of *dc* rows; sides of scutum outside the intraalar rows typically yellow to translucent yellow. Scutellum usually entirely yellow, sometimes dark at base. Upper pleura (anepisternum and anepimeron) mostly yellow, lower pleura (katapisternum and meron) mostly dark (Fig. 12). Dark specimens with only postpronotal lobe yellow (as in male) are also not rare (about 30% females). Thoracic spiracles yellow, posterior one small, shorter than width of katapisternum. Prosternum, notopleuron, katapisternum and meron bare; *dc* 2+3, all strong; *ac* 0+1; prealar seta shorter than posterior notopleural. Wings with a slight yellow tint; veins bare; crossveins not infuscated; calypters and halter yellow. *Legs*, including coxae, yellow, only tarsi dark. *t1* without seta. *t2* with 3 *p* setae. *f3* with 3–4 *av* near apex. *t3* with 3–4 *av*, 2 *ad* and 1 *pd* setae. *Abdomen* yellow with thin whitish dusting and indistinct narrow median vitta; apex of abdomen may be more or less darkened. Sternite 1 bare. Tergite 4 and 5 with distinct discal and marginal setae.

Male (Fig. 11) differs from female as follows: Fronto-orbital plates touching except for in anterior and posterior quarters; 3–4 inclinate setulae restricted to anterior quarter of frons, reclinate setae absent. Anterior facets of eyes enlarged. Postpedicel remarkably yellowish-white. Palpi narrower, half as wide as postpedicel. Scutum and pleura dark, only postpronotal lobe translucent yellow; scutellum darkened basally.

Phaonia luteovittata Shinonaga et Kano, 1971

Figs 2–3.

Phaonia luteovittata Shinonaga et Kano, 1971. Type locality: Japan, Hokkaido.

MATERIAL. RUSSIA: *Chelyabinsk* reg., *Taganay* Mts (55.221°N 59.734°E), 18–24.07.2008, K. Tomkovich, 1♂ (ZMUM); *Kemerovo* reg., *Teba* (53.64°N 88.57°E), 9.07.1962, K. Grunin, 1♀ (ZIN); *Perm* reg., *Kungur, Uchleskhoz = Preduralie* NP (presently

abolished, 57.36°N 57.14°E), 16.07.1979, A. Zinovjev, 1♂ (ZIN); Primorsky reg.: 20 km S of Oblachnaya Mt (43.69°N, 134.21°E), 8.08.1963, E. Narchuk, 1♀ (ZIN); SW bank of Khanka L. (45.0°N 132.0°E), 26.07.1969, M. Kandybina, 1♂ (ZIN); Sakhalin reg.: Kunashir Isl., Tretyakovo env., 43.99°N 145.66°E, YPT, 13–22.09.2009, I. Melnik, 1♂, 5♀♀; Kunashir Isl., Peschanoe Lake, 43.950°N 145.593°E, 1–5.08.2008, I. Melnik, 1♂; Kordon Filatovsky env. (44.194°N 146.027°E), YPT, 2–3.09.2009, I. Melnik, 2♀♀ (all ZMUM); Kunashir Isl., Lagunnoe L. (44.05°N 145.77°E), Violovich, 17–23.08.1955, 1♂, 1♀ (ZIN); Sakhalin Isl., Novoaleksandrovsk (47.05°N 142.72°E), 22.07.1968, E. Narchuk, 1♂ (ZIN); Shikotan Isl., Tserkovny Bay, 43.75°N 146.70°E, Yu. Sundukov, 11–17.06.2012, 1♂; 23–30.08.2013, 1♂ (all ZMUM).

DISTRIBUTION. Known from Japan (Hokkaido and Honsu) and Russia: from the Far East (Primorsky and Sakhalin reg.) to Ural (Chelyabinsk and Perm reg.).

DISCUSSION. The original description of *P. luteovittata* was reproduced in a more accessible source [Shinonaga, 2003: 163]. We have 2 specifications to the description: katempimeron bare [Shinonaga, 2003] or with setula (in about 40% of males and 15% females) (1); all females have no *prst ac* (2). Thus, *P. luteovittata* is very similar to European *P. rufiventris*, these species differ by body coloration (Fig. 2) and shape of male cerci (Fig. 3). Typically *P. luteovittata* has: *fl* darkened brown; tergites 4 and 5 entirely glossy black, tergite 3 often darkened on posterior border; disc of scutum subglossy, with only very thin grey dusting; colour of thorax variable: from almost entirely black to presence of some yellowish-brown areas on postpronotal lobe, postsutural sides of scutum and pleura; scutellum is always pure amber-yellow.

In specimens collected west of the Far East the colour pattern is slightly less distinct, but still reliable. For example, based on the colour pattern one of two males collected in Chelyabinsk region was identified as *P. rufiventris*, while another one as *P. luteovittata*, subsequent examination of genitalia confirmed correctness of both identifications. It seems that both European *P. rufiventris* and Far Eastern *P. luteovittata* are present in Siberia and Ural, but both species are uncommon in sharply continental climate of central Palaearctic. Further collecting can clarify the problem.

Phaonia pallida Fabricius, 1787

Figs 13–15.

Phaonia pallida Fabricius, 1787. Type locality: Copenhagen, Denmark.

MATERIAL. ABKHAZIA, Sukhumi (43°N 41°E) env., 9.06.1932, B. Rodendorf, 1♂ (ZMUM); ARMENIA, Ijevan env., Verin-Ahgdan = Gandzakar (40.84°N 45.17°E), 23.07.1969, V. Rikhter, 4♂♂, 3♀♀ (ZIN); AZERBAIJAN: Lankoran, Xanbulan Reservoir env. (38.65°N 48.78°E), 19–27.10.2008, N. Vikhrev, 2♀♀; YPT, 22–28.05.2009, K. Tomkovich, 1♂, 2♀♀ (all ZMUM); BELARUS, Brest reg., Belovezhskaya Pushcha NR (52.5°N 23.8°E), 17.07–7.08.1961, E. Narchuk, 7♀♀ (ZIN); FRANCE, Seine-Maritime, Foret de Brotonne (49.45°N 0.75°E), 12.08.2009, G. Pennards, 1♀ (ZMUM); HUNGARY, Balaton L., Tihany Peninsula (46.9°N 17.9°E), broadleaf forest, 30.06.1970, K. Gorodkov, 3♀♀ (ZIN); GERMANY, Saarbrücken env. (49.2°N 7.0°E), 9–13.07.1995, K. Gorodkov, 7♂♂ (ZIN); RUSSIA: Crimea reg.: Karadag (44.94°N 35.23°E), 22.06.1982, L. Zimina, 1♀; Pionerskoe env. (44.88°N 34.20°E), 14–17.06.1975, A. Zhelokhovtsev, 4♂♂, L. Zimina, 1♂, 1♀; 8.07.1976, A. Zhelokhovtsev, 1♂; Uchan-Su, 44.99°N 34.10°E, 30.09.1915, N. Vikhrev, 3♀♀ (all ZMUM); Krasnodar reg.: Adygea, Dakhovskaya env., 44.199°N 40.170°E, 465 m, YPT, K. Tomkovich, 17–25.06.2009, 2♂♂; 19–29.08.2009, 5♀♀; 44.217°N 40.105°E, 900 m, 24–25.06.2009, K. Tomkovich, 1♂; Agursky Canyon, 43.549°N 39.814°E, N. Vikhrev, 26.10.2006, 2♀♀; 29.09.2008, 1♀; 27.10.2007, D. Gavryushin, 1♀; 3–8.06.2008, K. Tomkovich, 3♂♂; Lazarevskoe env. (43.90°N 39.35°E), 12.07.1989, A. Shatalkin, 1♀; S Ozerevka (44.680°N 37.631°E),

16.07.2001, K. Tomkovich, 1♂ (all ZMUM); Kursk reg., Strel'skaya steppe, oak forest (51.565°N 36.085°E), 12.08.2008, N. Vikhrev, 1♀ (ZMUM); Moscow reg.: Ruza env., 55.66°N 36.05°E, E. Erofeeva, 11–20.06.2016, 1♂; 21–30.06.2016, 3♂♂; 1–10.07.2016, 2♀♀; 11–20.07.2016, 2♂♂; 11–20.08.2016, 2♀♀; 21–30.06.2017, 1♂; 1–10.07.2017, 6♂♂; 21–31.07.2017, 4♂♂; 1–10.08.2017, 4♂♂, 6♀♀; 1–10.09.2017, 3♀♀; Dmitrov distr., Kostino env. (56.31°N 37.75°E), N. Vikhrev, 27.06.2008, 1♂; 29.06.2012, 1♂; Andreevskoye env., 55.976°N 35.5857°E, 10.07.2007, A. Ozerov, 1♂, 2♀♀ (all ZMUM); Nizhny Novgorod reg., Nizhny Novgorod env., 56.28°N 43.70°E, 12.07.2009, N. Vikhrev, 1♀ (ZMUM); Perm reg., Kungur, Uchleskhoz = Preduralie NP (presently abolished), 57.36°N 57.14°E, Borisova, 8–15.07.1957, 4♂♂, 2♀♀; A. Zinovjev, 4.07.1979, 4♂♂, 2♀♀ (all ZIN); St-Petersburg reg., Kiperort peninsula, 60.48°N 28.56°E, 15–25.05.2012, K. Tomkovich, 7♂♂, 1♀ (ZMUM); Saratov reg., Saratov env. (51.6°N 46.1°E), 1–21.07.1917, A. Stackelberg, 2♀♀ (ZIN); Voronezh reg., Borisoglebsk env., 51.397°N 42.014°E, 23.08.2012, K. Tomkovich, 1♀; Voronezhsky NP (51.9°N 39.6°E), 20.06.1957, S. Kelejninkova, 1♂ (all ZMUM); SERBIA: Crni Vrh env., 43.407°N 22.587°E, 800 m, N. Vikhrev, 16–22.09.2014, 1♀; 1–7.07.2015, 3♂♂, 1♀; 29.06.2015, A. Ozerov et M. Krivosheina, 3♂♂, 1♀ (all ZMUM); TURKEY: Duzce prov., Aktas Selale (41.01°N 31.04°E), 400 m, 20–21.06.2010, N. Vikhrev, 1♂; Sakarya prov., Karasu (41.03°N 30.79°E), 15.06.2010, N. Vikhrev, 1♀; Zonguldak prov., Alaplı env. (41.14°N 31.36°E), 28.08.2009, N. Vikhrev, 1♀ (all ZMUM); UKRAINE: Zakarpatsky reg., Turya Polyana (48.7°N 22.804°E), 25–29.06.1964, L. Zimina, 3♂♂, 1♀ (ZMUM); Poltava reg., Yareski (49.84°N 33.90°E), 06–07.1929, Gildebrandt, 2♂♂, 30♀♀ (ZIN).

DISTRIBUTION. All over Europe; Iran and Israel [Pont, 1986]. The only Siberian record (Tyumen reg., Russia [Veselkin, 1966]) seems to us doubtful and we had not found any specimens of *P. pallida* among bequest to ZMUM Veselkin's collection. During several years of intensive collecting in Altai Mts and Novosibirsk region *P. pallida* was never recorded. Thus the easternmost reliable record is W Ural, Perm region, 57°E.

REMARKS. Normally *P. pallida* has entirely yellow pleura and scutum (the latter with some whitish dusting) as on Figs 14–15, but rarely pleura and scutum may be extensively darkened as on Fig. 13.

Phaonia regalis Stein, 1900

Phaonia regalis Stein, 1900. Type locality: Tiflis = Tbilisi, Georgia.

MATERIAL. GEORGIA: Tiflis = Tbilisi distr., Kojori, 41.66°N 44.71°E, 20.06.1916, Andrievsky, 1♂ (ZIN); Abastumani, pine forest with oak, 41.75°N 42.88°E, 10.09.1982, D. Kasparyan, 1♀ (ZIN); Manglisi (41.69°N 44.42°E), 1–10.08.1900, S. Zacharov, 1♀ (ZMUM); GREECE, C. Macedonia, Kerkini L. env., Wine Trap, 41.285°N 23.208°E, 475 m, 9–15.06.2008, G. Ramel, 1♂, 1♀ (ZMUM).

DISTRIBUTION. An uncommon species known from few localities in SW Palaearctic: Austria, Bulgaria, Greece, Georgia and Turkey.

REMARKS. Female from Greece has 1 pair of rather weak but distinct *prst ac*.

Phaonia rubriventris Emden, 1965

Figs 16–17.

Phaonia rubriventris Emden, 1965. Type locality: N Burma (Myanmar), Kambaiti and N India, Darjeeling.

MATERIAL. VIETNAM, Lai Chau prov., Hoang Lien NP, 22.350°N 103.768°E, 1950 m, 11.04.2012, D. Gavryushin, 1♂ (ZMUM).

DISTRIBUTION. Known from N India, N Burma, N Vietnam (new record) and China [Ma et al., 2002].

REMARKS. We could add to detailed Emden's [1965] description only that in *P. rubriventris* both meron and katempimeron are bare; prealar seta is strong; radial node of

wing is bare (thou, that follows from the key for Oriental *Phaonia* [Emden, 1965: 218]).

Phaonia rufiventris Scopoli, 1763

Fig. 4.

P. rufiventris Scopoli, 1763. Type locality: Carniola (presently Slovenia).

Phaonia populi Meigen, 1826.

MATERIAL. AZERBAIJAN, Lankoran, Xanbulan Reservoir env., 38.65°N 48.78°E, YPT, 18–20.05.2009, K. Tomkovich, 1♂ (ZMUM); BELARUS, Brest reg., Belovezhskaya Pushcha NR (52.5°N 23.8°E), 7.08.1961, E. Narchuk, 13♂♂, 23♀♀ (ZIN); FINLAND, Finland env., Harjavalta (61.3°N 22.1°E), 25.06.2009, T. van Ooik, 1♀ (ZMUM); RUSSIA: *Altai Republic*: Shebalinsky distr., Ilyinka env., 51.45°N 85.14°E, 1100 m, 19.07.2011, V. Sorokina, 1♂; Turochak distr., Obogo env. (51.52°N 87.29°E), 900 m, 28.06.2003, V. Sorokina, 1♂ (all ISEA); *Chelyabinsk reg.*, Taganay Mts (55.221°N 59.734°E), 18–24.07.2008, K. Tomkovich, 1♂ (ZMUM); *Crimea reg.*: Alushta-Rybachye, 44.7–8°N 34.4–6°E, 18–25.04.2014, N. Vikhrev, 2♂♂; Bolshoy Canyon, 44.519°N 33.996°E, 540 m, 26–30.09.2015, N. Vikhrev, 2♂♂, 2♀♀; Yalta env., 44.44°N 34.12°E, 300 m, 4–9.05.2016, E. Erofeeva, 1♂; N. Vikhrev, 1♂ (all ZMUM); *Kemerovo reg.*, W Kuznetsky Alatau, Rybnoye Lake, (54.33°N 88.40°E), 1240 m, 9.08.2006, D. Lopatin, 1♂ (ISEA); *Krasnodar reg.*: Agursky Canyon, 43.548°N 39.815°E, 20–24.04.2008, A. Ozerov, 2♀♀, D. Gavryushin, 1♀, N. Vikhrev, 20–24.04.2008, 5♀♀, 3–9.05.2011, 3♂♂, 6♀♀, 23–25.06.2011, 1♂; Guzeripl, 44.004°N 40.134°E, 700 m, 5–7.05.2013, N. Vikhrev, 1♂, 2♀♀; Lagonaki Plateau, 44.012°N 40.034°E, 1020–1500 m, N. Vikhrev, 27–30.06.2011, 1♂, 1♀; Lagonaki Plateau, Azish cave env., 44.107°N 40.020°E, 1450 m, YPT, 26–28.09.2009, K. Tomkovich, 2♀♀; Dakhovskaya env., 44.220°N 40.100°E, 750–950 m, YPT, 24.06.2009, K. Tomkovich, 1♂, 2♀♀ (all ZMUM); *Krasnoyarsk reg.*, Krasnoyarsk env., E bank, Stolby, 55.963°N 92.745°E, 209–260 m, YPT, 18–19.06.2011, K. Tomkovich, 1♀ (ZMUM); *Kursk reg.*: Centralno-Chernozemny NP., Streletskaya steppe (51.565°N 36.085°E), 7.09.2007, A. Ozerov, 1♂ (ZMUM); *Moscow reg.*: Ruza env., 55.66°N 36.05°E, E. Erofeeva, 11–20.09.2015, 3♀♀; 1–10.06.2016, 5♂♂, 5♀♀; 11–20.06.2016, 4♂♂, 4♀♀; 21–30.06.2016, 1♂; 21–31.07.2016, 1♀; 11–20.08.2016, 1♂, 1♀; 21–31.08.2016, 2♂♂, 7♀♀; 1–11.09.2016, 1♂, 4♀♀; 1–10.06.2017, 3♂♂, 1♀; 11–20.06.2017, 15♂♂; 21–30.06.2017, 9♂♂, 3♀♀; 1–10.07.2017, 2♂♂, 5♀♀; 21–31.07.2017, 2♂♂; 1–10.08.2017, 5♂♂, 26♀♀; 11–20.08.2017, 10♀♀; 21–31.08.2017, 12♂♂, 88♀♀; 1–10.09.2017, 25♂♂, 62♀♀; 11–20.09.2017, 2♂♂, 2♀♀; Dmitrov distr., Kostino env. (56.31°N 37.75°E), N. Vikhrev, 15.06.2006, 1♀; 2.06.2010, 1♂; 27.08.2012, 1♀; Moskovsky env., 55.588°N 37.333°E, YPT, K. Tomkovich, 29–31.07.14, 1♂; 1.07.2015, 1♀; 23.06.2016, 1♂; Chekhov distr., st. 66 km (55.229°N 37.487°E), 22.05.2012, K. Tomkovich, 1♂; Podolsk env., 55.448°N 37.563°E, YPT, K. Tomkovich, 25–29.08.2011, 1♂; 2–5.09.2011, 1♀; Abramtsevo (56.184°N 37.968°E), E. Smirnov, 3.06.1957, 1♂, 25.06.1958, 1♀; Golitsyno (55.613°N 36.978°E), 6.06.1981, A. Shataikin, 1♂ (all ZMUM); *Murmansk reg.*: Monchegorsk env. (67.946°N 32.895°E), M. Kozlov, 11–18.07.2009, 1♂; 25–31.07.2009, 1♀; Murmansk env., 68.95°N 33.13°E, 9–15.08.2010, N. Vikhrev, 2♀♀; Murmansk env., 68.973°N 33.138°E, 21.07.2011, A. Ozerov, 1♂ (all ZMUM); *Novosibirsk reg.*: Novosibirsk Academy town (54.817°N 83.15°E), 14.06.2008, O. Kosterin, 1♀; Novosibirsk env., 54.87°N 83.05°E, 3.09.2016, O. Kosterin, 1♀ (all ZMUM); *St-Petersburg reg.*, Kiperort peninsula, 60.48°N 28.56°E, 15–25.05.2012, K. Tomkovich, 3♂♂, 1♀ (all ZMUM); *Tver reg.*, Derbovezh L. env., 56.33°N 31.97°E, 21.06.2012, N. Vikhrev, 1♀ (ZMUM); *Vladimir reg.*, Vladimir env., 56.05°N 40.41°E, 16.06.2013, N. Vikhrev, 4♂♂ (ZMUM); SERBIA: Crni Vrh env., 43.407°N 22.587°E, 800 m, 16–22.09.14, N. Vikhrev, 8♂♂, 4♀♀; Babin Zub (43.374°N 22.621°E), 1547 m, 1–7.07.2015, N. Vikhrev, 1♂, 2♀♀; A. Ozerov et M. Kri-vosheina, 3♂♂ (all ZMUM). SWITZERLAND, Graubunden (Grisons) kanton, J. Warner, 28.08.1910, 1♀; 12.08.1913, 1♂ (ZIN).

DISTRIBUTION. *P. rufiventris* is a common species all over Europe. It is also recorded from Ural region; West and Central Siberia, though *P. rufiventris* becomes uncommon in Asia and in spite of intensive collecting it is represented by few Asian specimens in ZMUM, ZIN and ISEA collections.

REMARKS. The variability in comparison with *P. sub-venta* is given below.

Phaonia subventa Harris, 1780

Figs 5–7.

Phaonia variegata Meigen, 1826.

Phaonia subventa Harris, 1780. Type locality: S E England.

MATERIAL. AZERBAIJAN: Lankoran, Xanbulan Reservoir env., 38.65°N 48.78°E, 19–27.10.2008, N. Vikhrev, 3♂♂, 1♀; YPT, 15–22.05.2009, K. Tomkovich, 1♂, 4♀♀ (all ZMUM); BELARUS, *Vitebsk reg.*, Orsha env., Dnepr R., 54.543°N 30.463°E, 11.06.2017, N. Vikhrev, 1♂, 4♀♀ (ZMUM); GREECE, Kerkini Mts, 41.34°N 23.33°E, 27.03.2008, G. Ramel, 1♂ (ZMUM); ITALY, 07.1933, Zhenzhurist (N. Filippov), 1♂ (ZMUM); MOROCCO, *Al Haouz prov.*, Oukaïmeden (31.23°N 7.81°W), 2000 m, 13–17.05.2012, N. Vikhrev, 1♂ (ZMUM); PORTUGAL, Vila do Conde, 41.35°N 8.75°W, 2–6.07.2010, O. Kosterin, 3♀♀ (ZMUM); RUSSIA: *Crimea reg.*: Alupka env. (44.421°N 34.038°E), 4.10.1936, N. Filippov, 3♀♀; Alushta-Rybachye, 44.7–8°N 34.4–6°E, 18–25.04.2014, N. Vikhrev, 4♂♂; Bolshoy Canyon, 44.519°N 33.996°E, 540 m, 26.09.2015, N. Vikhrev, 6♂♂; Yalta env., 44.44°N 34.12°E, 300 m, 4–9.05.2016, E. Erofeeva, 4♂♂, 4♀♀ (all ZMUM); *Karelia reg.*, Pudozhsky distr., Tyagozero Lake (62.03°N 36.12°E), 6.08.1969, V. Korolev, 1♀ (ZMUM); *Krasnodar reg.*: Adler env., 43.477°N 39.907°E, 27.10.2009, D. Gavryushin, 2♂♂; Agursky Canyon (43.548°N 39.815°E), A. Ozerov, 27–30.03.2006, 6♂♂, 1♀, 25.04.2008, 1♂; N. Vikhrev, 5–28.03.2006, 2♂♂, 4♀♀; 24.10.2006, 1♂, 3♀♀; 27.10.2007, 1♂; 3–9.05.2011, 2♂♂, 2♀♀, 23–25.06.2011, 1♀; Psekhako Mt, 43.697°N 40.367°E, 2000 m, 14–18.06.2008, K. Tomkovich, 2♀♀; Alpika-service, 43.67°N 40.28°E, 600 m, 11–13.06.2008, K. Tomkovich, 3♀♀; Adygea: N Lagonaki Mt, Azish cave env., 44.107°N 40.020°E, 1450 m, YPT, 15–17.06.2009, K. Tomkovich, 3♀♀; Lagonaki, 44.009°N 39.994°E, 1500–1900 m, N. Vikhrev, 27–30.06.2011, 1♀; 11.06.2012, 1♀; 5–9.06.2015, 1♀; Dakhovskaya env., 44.199°N 40.170°E, YPT, 18–31.08.2009, K. Tomkovich, 1♀; *Kursk reg.*: Selihovi Dvori env., Streletskaya steppe, oak forest (51.565°N 36.085°E), N. Vikhrev, 26.05.2007, 1♂; 12.08.2008, 1♀; Centr.-Chernozem Res., Bukreevy Barmy (51.50°N 37.34°E), 6.05.2008, K. Tomkovich, 1♂ (all ZMUM); *Moscow reg.*, Ruza env., 55.66°N 36.05°E, E. Erofeeva, 1–11.09.2016, 3♀♀; 21–30.06.2017, 6♂♂, 3♀♀; 1–10.07.2017, 1♂, 2♀♀; 11–20.07.2017, 1♀; 11–20.08.2017, 6♀♀; 21–31.08.2017, 21♂♂, 29♀♀; 1–10.09.2017, 10♂♂, 27♀♀; 11–20.09.2017, 1♀ (all ZMUM); *Murmansk reg.*, Monchegorsk env. (67.946°N 32.895°E), 25–31.07.2009, M. Kozlov, 1♂ (ZMUM); *Novgorod reg.*, Holm env. (57.147°N 31.175°E), 23–30.09.2000, K. Tomkovich, 1♀ (ZMUM); *Ryazan reg.*, Kasimov env., Zalesnoe vill., 54.969°N 41.327°E, 21–26.07.2013, N. Vikhrev, 1♀ (ZMUM); SERBIA: Crni Vrh env., 43.407°N 22.587°E, 800 m, N. Vikhrev, 1–8.05.2015, 3♂♂, 6♀♀; 1–7.07.2015, 1♀; Babin Zub (43.374°N 22.621°E), 1547 m, 6.07.2015, A. Ozerov et M. Kri-vosheina, 1♂ (all ZMUM); TURKEY: *Antalya prov.*: Kurshunlu waterfall (37.07°N 30.86°E), N. Vikhrev, 25.02.2008, 2♀♀; 1.04.2008, 1♂; Manavgat, pine forest (36.87°N 31.47°E), 19–24.02.2008, N. Vikhrev, 2♀♀; 31.03.2008, N. Vikhrev, 1♂; K. Tomkovich, 26.02.2008, 1♂, 1♀; *Aydın prov.*, Dilek Milli Park (37.7°N 27.2°E), 19.12.2006, N. Vikhrev, 1♂; *Mersin prov.*, near Silifke, 36.405°N 33.804°E, 23.04.2010, N. Vikhrev, 1♀; *Sakarya prov.*, Karasu env., 41.1°N 30.7°E, 09.05.2009, N. Vikhrev, 1♂ (all ZMUM); UKRAINE, Kanev (49.759°N 31.469°E), 19.09.1975, V. Sychevskaya, 1♀ (ZMUM); USA, RI, Coventry Co, 41.69°N 71.55°W, 1–14.05.2017, A. Medvedev, 4♀♀ (ZMUM).

DISTRIBUTION. *P. subventa* is a common W Palaearctic species: Europe (to the east to Central European Russia and Russian Caucasus); N Africa: Morocco; Near East: Turkey. The easternmost known locality is Azerbaijan (48.78°E). Introduced in the Nearctic region.

REMARKS. The variability in comparison with *P. rufiventris* is given below. In vast majority of cases it is necessary to choose between *P. rufiventris* and *P. subventa* — two the most common European species. At the same time these two

species are the most variable in the *P. pallida* group (*P. pallida* and *P. kowarzii* are variable only in colour pattern of the thorax, other species are known by very limited series).

P. rufiventris

Aristal hairs. ♂♀: 0.75–1.3x as long as width of postpedicel.

Pedicel. ♂♀: yellow or dark.

Interfrontal setae. ♀: absent.

Inclinate frontal setae. ♂: 5–6 pairs of inclinate frontal setae (either strong and weak ones) confined to lower third of frons.

Thoracic colour pattern. ♂: In dark specimens (about 65%) the colour pattern is similar to yellowish males of *P. subventa* i.e. only postpronotal lobe yellow, scutellum usually darkened at base. In yellow specimens (about 35%) the sides of the scutum outside the intraalar rows and pleura somewhere yellow, scutellum usually yellow. ♀: the colour pattern as in yellow males.

Presutural *ac* setae. ♂: 1 pair, rarely 2 pairs (6%). ♀: 1 pair or absent (30% specimens).

Katepimeron. ♂: with 1–2 setulae, rarely bare in 2% of accurately mounted specimens; more frequent in the specimens in bad condition or collected by YPT or Malaise trap; ♀: with 1 hair or bare (40% specimens). The typical situation is that the setulae are present or absent on the katepimeron on both sides of the thorax; specimens with the setula presents on one side and absents on the other are rare. Such distribution indicates that the setulae on the katepimeron were not broken but were initially absent in almost half of females.

Meron. ♂♀: bare.

Crossveins on wing. ♂♀: indistinctly infuscated.

t1. ♂♀: without *p* seta.

t2. ♂♀: with 3 rarely 4 (7%) *p* setae.

Ecology

No information was published on ecology of *P. bitincta*, *P. luteovittata*, *P. regalis* or *P. rubriventris*, the authors of this paper also have never observed these species personally.

P. subventa is a typical visitor of excrements or carrion. Other 3 species: *P. kowarzii*, *P. pallida* and *P. rufiventris* are not specially attracted to rotten organic, although can visit it occasionally. Their typical habitat is grass or low brushes in forest. *P. pallida* distinctly prefers grass, while *P. kowarzii* prefers leaves of bushes at a height of 1–2 m, *P. rufiventris* may be found either on grass or bushes.

IDENTIFICATION KEY FOR PALAEARCTIC *PHAONIA PALLIDA* GROUP

1. *dc* 2+3. (Strong *prst ac* always absent in both sexes. Meron and katepimeron always bare) 2
— *dc* 2+4 3
2. Femora and tibiae entirely yellow. Palpi yellow. Calyptrae yellow. At least postpronotal lobe translucent yellow (♂, Fig. 11), in ♀ thorax usually broadly yellow as on Fig. 12. ♂: Postpedicel remarkably yellowish-white (Fig. 11) *kowarzii* Shnabl
— Fore femur and tibia mostly dark; mid and hind legs with femora darkened at apex and tibiae darkened at base. Palpi dark. Calyptrae brown. Thorax entirely dark in both sexes (Figs 16–17). ♂: Postpedicel dark (Fig. 17) *rubriventris* Emden
3. Radial node on lower side of wing with 2–4 setulae. Thorax normally entirely yellow with whitish dusting on

Thus, we offer the direct comparison of *P. rufiventris* and *P. subventa* together with the data on variability from hundreds of examined specimens.

P. subventa

Aristal hairs. ♂♀: 0.5–0.75x as long as width of postpedicel.

Pedicel. ♂: dark. ♀: dark, rarely (4%) yellow(ish).

Interfrontal setae. ♀: present, sometimes (17%) absent.

Inclinate frontal setae. ♂: 7–10 pairs of inclinate frontal setae (either strong and weak ones) extend to middle of frons.

Thoracic colour pattern. ♂: Thorax entirely dark, including postpronotal lobe and dorsal surface of the scutellum, only sides of scutellum yellow (30%); or thorax dark, but postpronotal lobe yellow(ish) and dorsal surface of scutellum mostly yellow, only its base darkened (70%). ♀: Thorax entirely dark, including postpronotal lobe and dorsal surface of the scutellum (14%); or thorax dark, but postpronotal lobe yellow(ish) (86%), in this form dorsal surface of scutellum mostly yellow, only its base darkened, rarely (2%) scutellum entirely yellow.

Presutural *ac* setae. ♂♀: 2 or 3 (14%) pairs.

Katepimeron. ♂♀: bare.

Meron. ♂: with 1–5 setulae along lower border of posterior spiracle (absent/broken in 3%). ♀: with 1–3 hairs or bare in 27%

Crossveins on wing. ♂♀: distinctly infuscated.

t1. ♂: without *p* seta (or with 1 *p*: 19%); ♀: with 1(2) *p*, rarely without *p* setae (5%).

t2. ♂♀: with 2 or 3 (10%) *p* setae.

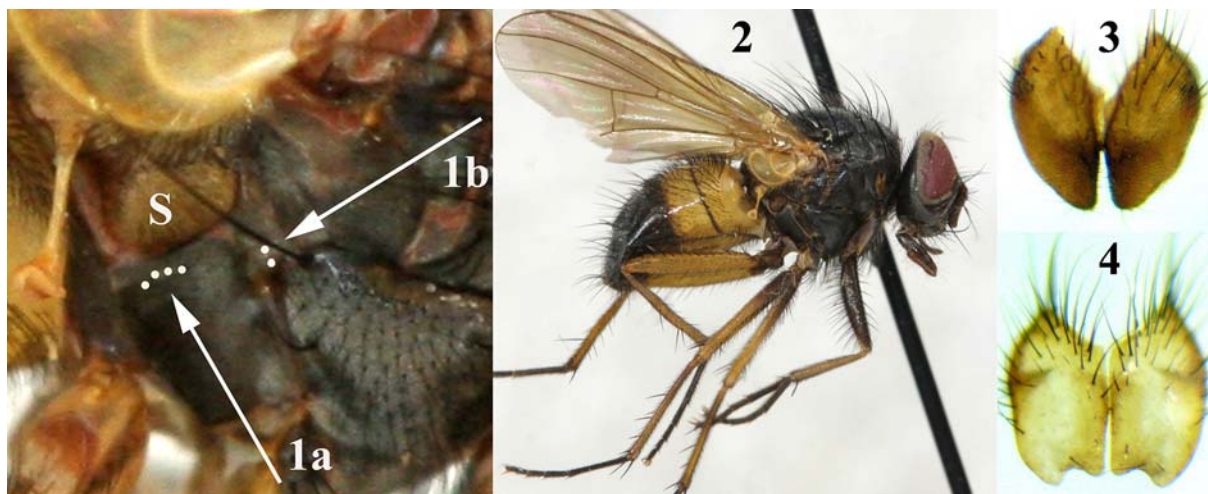
- scutum. (Katepimeron setulose as on Fig. 1b, meron bare. *t1* without seta. Aristal hairs longer than width of postpedicel) 4
— Radial node on lower side of wing bare. Thorax, especially scutum more or less extensively darkened 5
4. Notopleuron densely haired. Strong *prst ac* absent. Hairs on occiput and pleura partly yellow (katepimeron with all hairs yellow). Large species, body length 9–11 mm *regalis* Stein
— Notopleuron bare. Two pairs of strong *prst ac*. All hairs on occiput and pleura black. Medium size species, body length 6–8 mm *pallida* Fabricius
 5. Katepimeron usually with 1–2 minute hairs (Fig. 1b), meron always bare. Crossveins not infuscated. ♂: 4–6 pairs of inclinate frontal setae (either strong and weak ones) confined to lower third of frons. *prst ac* — 1(2) pairs. ♀: Frons without interfrontals. *t1* without *p*. *prst ac* — 0–1 pairs 6
— Katepimeron always bare, meron usually with 2–6 minute hairs along lower border of posterior spiracle (Fig. 1a). Crossveins distinctly infuscated. ♂: 7–10 pairs of inclinate frontal setae (either strong and weak ones) extend over the middle of frons. *prst ac* — 2–3 pairs. ♀: Frons usually with interfrontals. *t1* usually with *p*. *prst ac* — 2 pairs 7
 6. *fl* darkened. Tergites 5 entirely and tergite 4 partly glossy black, tergite 3 often darkened on posterior border. Disc of scutum with only thin grey dusting. Scutellum always pure amber-yellow. ♂: Cercal plate with strong sclerotization and halves of cerci narrowed at apex (Fig. 3). ♀: Strong *prst ac* absent *luteovittata* Shinonaga et Kano

— *fl* yellow. Tergites yellow, at most slightly darkened somewhere. Disc with distinct grey dusting. Scutellum yellow or darkened at base. ♂: Cercal plate with weak sclerotization, and halves of cerci bidental at apex (Fig. 4). ♀: Strong *prst ac* usually present *rufiventris* Scopoli

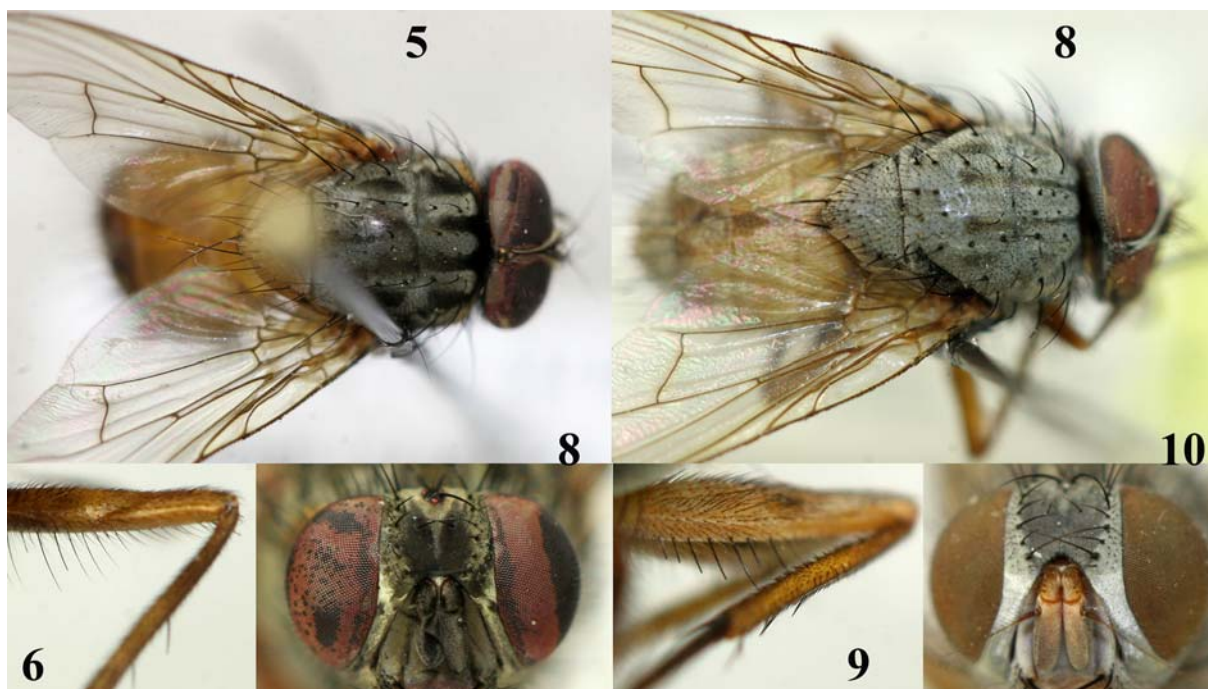
7. Arisal hairs 1.5x as long as width of postpedicel. Back of the head (lower occiput and postgenae) covered with golden setulae. Scutum densely grey dusted, in posterior view on presutural part of scutum, the width of pair of black submedian vittae (together) 0.5x as wide as width of median grey vitta between them (Fig. 8). Abdomen evenly (though thinly) whitish dusted with distinct undusted

median vitta. *t2* with 3(4) *p* setae. ♂: Cheeks wide, 1.5–2x wider than width of *fl*. *f2* with spine-like ventral setae (Fig. 9). Pedicel yellowish. ♀: Fronto-orbital plates and parafacias densely and evenly whitish dusted; frons thinly whitish dusted (Fig. 10) *bitincta* Rondani

— Arisal hairs at most 0.75x as long as width of postpedicel. All occipital setulae black. Scutum thinly dusted, partly shining black, in posterior view on presutural part of scutum, the width of pair of black submedian vittae (together) wider than width of median grey vitta between them (Fig. 5). Abdomen mostly shining yellow (sometimes partly darkened), median vitta indistinct. *t2* with



Figs 1–4. *Phaonia* spp: 1–3 — *P. luteovittata*; 4 — *P. rufiventris*; 1 — location of hypopleural hairs; 2 — habitus, male; 3–4 — cercal plate; 1a — on meron along the lower border of posterior spiracle, 1b — on katepimeron, S — posterior spiracle
 Рис 1–4. *Phaonia* spp: 1–3 — *P. luteovittata*; 4 — *P. rufiventris*; 1 — расположение гипоплеуральных волосков; 2 — внешний вид, самец; 3–4 — церки; 1a — на мероне вдоль нижней границы заднего дыхальца; 1b — на катэпимероне, S — заднее дыхальце.



Figs 4–10. *Phaonia* spp: 5–7 — *P. subventa*; 8–10 — *P. bitincta*; 5, 8 — male, dorsal view; 6, 9 — male *f2*, anterior view; 7, 10 — female head.
 Рис 4–10. *Phaonia* spp: 5–7 — *P. subventa*; 8–10 — *P. bitincta*; 5, 8 — самец, сверху; 6, 9 — *f2* самца, спереди; 7, 10 — голова самки.



Figs 11–12. *P. kowarzii*: 11 — male syntype; 12 — female.

Рис 11–12. *P. kowarzii*: 11 — самец, синтип; 12 — самка.



Figs 13–15. *P. pallida*: 13 — male, dark form; 14 — typical male; 15 — typical female.

Рис 13–15. *P. pallida*: 13 — самец, тёмная форма; 14 — самец типичной окраски; 15 — типичная самка.



Figs 16–17. *P. rubriventris*: 16 — female paratype (photo: Nigel Wyatt); 17 — male.

Рис 16–17. *P. rubriventris*: 16 — самка, паратип (фото: Nigel Wyatt); 17 — самец.

2(3) *p* setae. ♂: Cheeks narrower, about as wide as width of *fl. f2* with fine ventral setae (Fig. 6). Pedicel dark. ♀: Frons, fronto-orbital plates and parafacials dark (parafacials with whitish spot at level of pedicel (Fig. 7)).

..... *subventa* Harris

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