Phaonia latipalpis SPECIES GROUP (DIPTERA, MUSCIDAE): REVIEW OF FAUNA OF RUSSIA AND SHORT NOTES ON FAUNAS OF ADJACENT TERRITORIES

N.E. Vikhrev, E.A. Erofeeva

Zoological Museum of Moscow University, Russia
e-mail: nikita6510@yandex.ru

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The *Phaonia latipalpis* species group (Diptera, Muscidae) is reviewed. Some problems on taxonomy of the *P. latipalpis* group are clarified. Based on an examination of more than 400 specimens from several remote localities, the variability of *P. zugmayeriae* is studied, such an approach may turn out to be useful for other taxa of Phaoninae. The faunas of the *P. latipalpis* group of the West Palaearctic, Russian Far East and the Kuril Islands are considered separately, identification keys for each of these territories are offered. The faunas of the *P. latipalpis* group of China, Japan and the Nearctic region are briefly considered. One new synonym: *P. apicata* Johannsen, 1916 = *P. solitaria* Stein, 1920; **syn. nov**., and two new statuses: *P. ommatina* Zinovjev, 1981 to *P. angustifrons ommatina* Zinovjev, 1981 **stat. nov**.; *P. apicata* Johannsen, 1916 to *P. apicalis apicata* Johannsen, 1916; **stat. nov**. are proposed.
Key words: Diptera, Muscidae, *Phaonia latipalpis* group, new records

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Introduction

In present paper, we would try to clarify taxonomy of several Eurasian species of *Phaonia* Robineau-Desvoidy, 1830 with scutellum partly or entirely yellow. The considered species can be characterized as follows:

– Scutellum partly or entirely translucent or amber-like yellow (not opaque yellowish under whitish dusting as in *P. trimaculata* or *P. errans*);
– Abdomen entirely dark (not yellow as in species placed by Hennig in the *P. pallida* group which was recently reviewed by Vikhrev & Erofeeva (2018);
– Notopleuron entirely bare (except for *P. asierrans* and partly *P. zugmayeriae*);
– Prealar seta two times longer than posterior notopleural; posterior notopleural seta 0.5–0.75x as long as anterior one (except for *P. zugmayeriae* and Nearctic *P. bysia*).

The following species of *Phaonia* known from Russia meet the above criteria:

P. apicalis Stein, 1915
P. angustifrons Shinonaga & Kano, 1971
P. asierrans Zinovjev, 1981
P. latipalpis Schnabl, 1911 (= *P. umbraticola* Fonseca, 1957)
P. ommatina Zinovjev, 1981
P. zugmayeriae Schnabl, 1888

The oldest valid species name among Palaearctic fauna is *P. zugmayeriae*, however, it is not easy to choose the name for this species-group. Hennig (1963) placed *P. umbraticola* and *P. zugmayeriae* in the *P. zugmayeriae* group. A set of *Phaonia* species known from Russia which was very similar to that given above was proposed by Zinovjev (1981a) as the *P. umbraticola* group. In the latest publications (mostly Chinese and Japanese ones), the name the *P. latipalpis* group is used, so we will name it in order to minimize the number of terms used.

In this paper, we do not focus on how our species set corresponds to the real and as yet unknown intraspecific phylogeny of *Phaonia*. Our main task is to delimit the described taxa more clearly and help with their identifications. In order to better address the task at hand, we will look at the regional faunas separately, so the article is divided into several chapters:

I-1. The Western and Central Palaearctic.

I-2 The Russian Far East (excluding the Kuril Islands).

I-3 The Kuril Islands.

II. Short notes on faunas of the *P. latipalpis* group of China, Japan and the Nearctic region.

Material and Methods

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

MNHN – Muséum national d'Histoire naturelle, Paris, France;

ZIN – Zoological Institute, Saint Petersburg, Russia;

ZMUM – Zoological Museum of Moscow University, Russia.

Geographical coordinates are given in the Decimal Degrees format.

The following generally accepted abbreviations for morphological structures are used: *f1*, *t1*, *f2*, *t2*, *f3*, *t3* = fore-, mid-, hind- femur or tibia respectively; *ac* – acrostichal setae; *dc* – dorsocentral setae; *prst* – presutural; *post* – postsutural; *a*, *p*, *d*, *v* = anterior, posterior, dorsal, ventral seta(e).

Localities are given as follows: country, region/state/province (in italics), and geographical coordinates in decimal-degree format. The full names of regions of Russian administrative subdivisions are an entangled result of political and historical events of no interest for zoology, so they are listed as name (taken from the English version of Wikipedia) and word "region" (abbreviated in the text – "reg.").

Illustrations are original unless otherwise indicated. When referring to figures, to avoid confusion we capitalize the first letter (Fig.) for those appearing in this paper and use lowercase (fig.) for those published elsewhere.

Results and Discussion

I-1. The Western and Central Palaearctic

The fauna includes three species and one form of uncertain taxonomic status. The Western and Central Palaearctic, as reviewed here, cover all of Europe, the Caucasus and Siberia till the Yenisey River to the east. The distribution of

P. zugmayeriae is within the boundaries proposed here, while both *P. apicalis* and *P. latipalpis* have ranges extended to the Far East. For the last two species, we present here the examined material, including specimens from the Far East but excluding those from the Kuril Islands.

MATERIAL EXAMINED

Phaonia apicalis Stein, 1915 (Fig. 1, Fig. 2)

RUSSIA: *Bashkortostan* reg., 10 km SE of Beloretsk, 850 m, 53.89° N, 58.5° E, 15–19.06.2020, N. Vikhrev, 1 ♀ (ZMUM);

Irkutsk reg., Slyudyanka, 51.68° N, 103.69° E, 480 m, 27–29.06.2021, N. Vikhrev, 2 ♀♀ (ZMUM);

Kamchatka reg., 60 km N Milkovo, (55.1° N, 159.1° E), 28–30.07.1978, A. Zinovjev, 2 ♀♀; 47 km E Esso, (55.8° N, 159.4° E), 6.08.1978, A. Zinovjev, 1 ♀; Koryaki env., (53.25° N, 158.15° E), 21.07.1978, A. Zinovjev, 1 ♀ (all ZIN);

Khabarovsk reg., 15 km N Bikin, (46.9° N, 134.3° E), 1.06.1983, A. Zinovjev, 2♂♂, 1 ♀ (ZIN); Bolshekhekhtsirsky NP, (48.26° N, 134.77° E), 2.07.1982, A. Zinovjev, 2 ♀♀ (ZIN); Solnechny env, 50.72° N, 136.67° E, 17–19.6.2022, N. Vikhrev, 1 ♂, 2 ♀♀ (ZMUM); Nizhnyaya Manoma, 49.33° N, 136.61° E, 22.06.2022, N. Vikhrev, 1 ♀ (ZMUM);

Khanty-Mansy reg., E Ural, Khulga R., 65.151° N, 62.110° E, 13–16.07.2018, K. Tomkovich, 1 ♀; *Krasnoyarsk* reg., Krasnoyarsk env., E bank, Stolby, 55.963° N, 92.745° E, YPT, 18–19.06.2011, K. Tomkovich, 2 ♀♀ (ZMUM);

Mordovia reg., Smolny National Park (16 km NE of Kemlya*)*, 54.76° N, 45.47° E, 17.09.2019, G.Semishin, 1 ♀;

Moscow reg., Moskovskiy env., 55.58° N, 37.33° E, YPT, 22.06.2015, K. Tomkovich, 1 ♀; Ruza env., 55.66° N, 36.05° E, E. Erofeeva, 21–31.05.2016, 1 ♀; 11–20.06.2017, 1 ♀; 21–30.06.2017, 1 ♂, 1 ♀; 21–31.07.2017, 2 ♀♀; 1–11.08.2017, 1 ♀; 11–20.08.2017, 1 ♀; 21–30.06.2020, 1 ♂ (all ZMUM);

Perm reg., Kungur, Uchleskhoz (= presently abolished Preduralie National Park, 57.36° N, 57.14° E), A. Zinovjev, 24.06.1979, 1 ♀ (ZIN);

Primorsky reg., Kamenushka env.: (43.622° N, 132.232° E), 6.06.1979, A. Zinovjev, 2 ♀♀; Vladivostok, Sedanka, (43.2° N, 132.0° E), 3.06.1979, A. Zinovjev, 1 ♂; Anisimovka env., (43.17° N, 132.79° E), 17.06.1979, A. Zinovjev, 1 ♂ (all ZIN);

Saint Petersburg reg., Krasnitsa env., (59.45° N, 30.35° E), 8.06.1980, D. Kasparyan, 1 ♀ (ZIN);

Tuva reg., Uyuk R., 52.07° N, 94.04° E, 800 m, 1–3.07.2017, N. Vikhrev, 1 ♀;

Yaroslavl reg., Berdicino, (57.45° N, 40.10° E), 28.05.1906, A. Yakovlev, 1 ♀ (ZIN).

DISTRIBUTION. Northern and Central Europe (Pont, 2013), Siberia, Far East, not recorded for the Caucasus. The records from Alaska (Huckett, 1965) and Japan (Kato, 1936) requires confirmation.

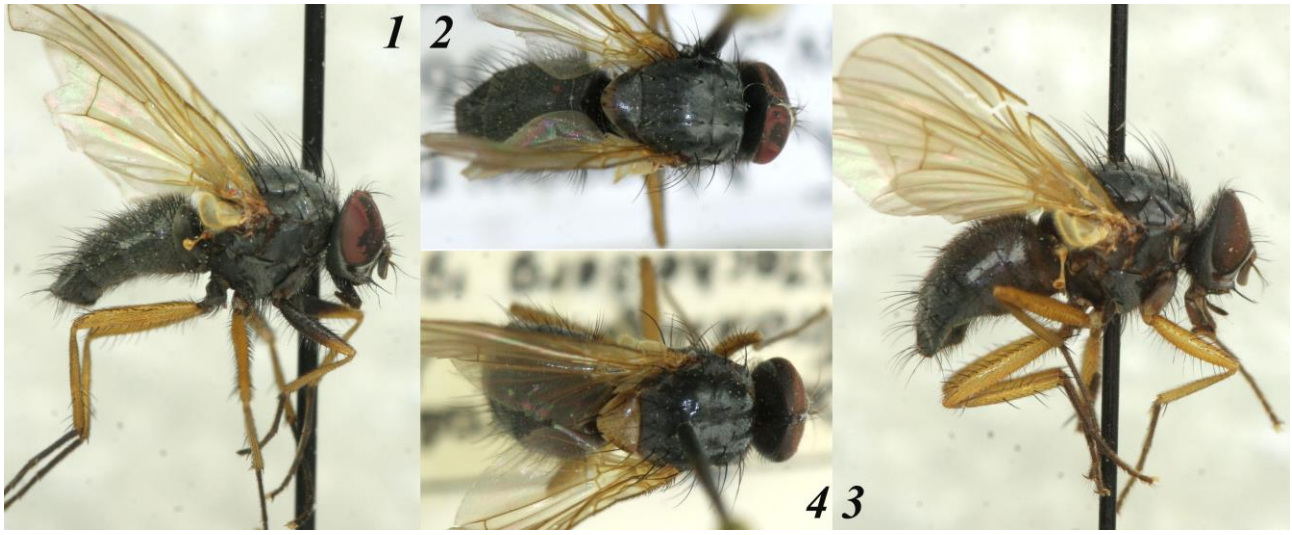

Fig. 1, Fig. 2, Fig. 3, Fig. 4. 1–2: male *P. apicalis*: 1 – lateral view, 2 – dorsal view; 3–4: male *P. latipalpis*: 3 – lateral view, 4 – dorsal view.

Phaonia latipalpis Schnabl, 1911 (Fig. 3, Fig. 4)
P. umbraticola Fonseca, 1957

RUSSIA: *Altai Rep.* reg., Ust-Sema env., 51.6° N, 85.8° E, 21–26.06.2016, N. Vikhrev, 1 ♀ (ZMUM); Altai between Ada and Matur Rivers (= 50 km E of Tashtagol, 52.7° N, 88.6° E), 11.07.1897, Yu. Wagner, 1 ♂ (ZIN);

Chelyabinsk reg., Taganay Mts., (55.221° N, 59.734° E), 18–24.07.2008, K. Tomkovich, 1 ♀ (ZMUM);

Khakasia reg., Shira env., Beljo salt-lake, 54.65° N, 90.18° E, 382m, YPT, 1–3.07.2011, K. Tomkovich, 1 ♀; Kubayka, 52.33° N, 89.82° E, 620 m, 10–13.07.2017, N. Vikhrev, 1 ♀ (all ZMUM);

Krasnoyarsk reg., 35 km WWS of Krasnoyarsk, Shumiha R., 19.07.1958, G. Bey-Bienko, 1 ♀ (ZIN); Krasnoyarsk env., E bank, Stolby, 55.963° N, 92.738° E, 209–260 m, YPT, 30–31.07.2009, K. Tomkovich, 1 ♀ (ZMUM);

Moscow reg., Ruza env., 55.66° N, 36.05° E, E. Erofeeva, 1–11.06.2019, 1 ♀; 11–20.06.2020, 1 ♀ (all ZMUM);

Primorsky reg., Andreevka env., 42.7° N, 131.1° E, 26.07–3.08.2018, N. Vikhrev, 1 ♂, 1 ♀ (ZMUM);

Saint Petersburg reg., Tolmachevo env., (58.85° N, 29.9° E), 1.08.1935, A. Stackelberg, 1 ♂ (ZIN).

DISTRIBUTION. Similar to that of *P. apicalis*: Northern and Central Europe (Pont, 2013), Siberia, Far East, not recorded for the Caucasus.

Phaonia zugmayeriae Schnabl, 1888 (Fig. 5, Fig. 6, Fig. 17)

AZERBAIJAN: unknown locality: alpine meadow at 1800 m, 4.08.1962, Zagulyaev, Pastuhov, 1 ♀ (ZIN);

CZECHIA: Marienbad, (Marianske Lazne, 50.0° N, 12.7° E), Kowarz, 1 ♂ (ZIN);

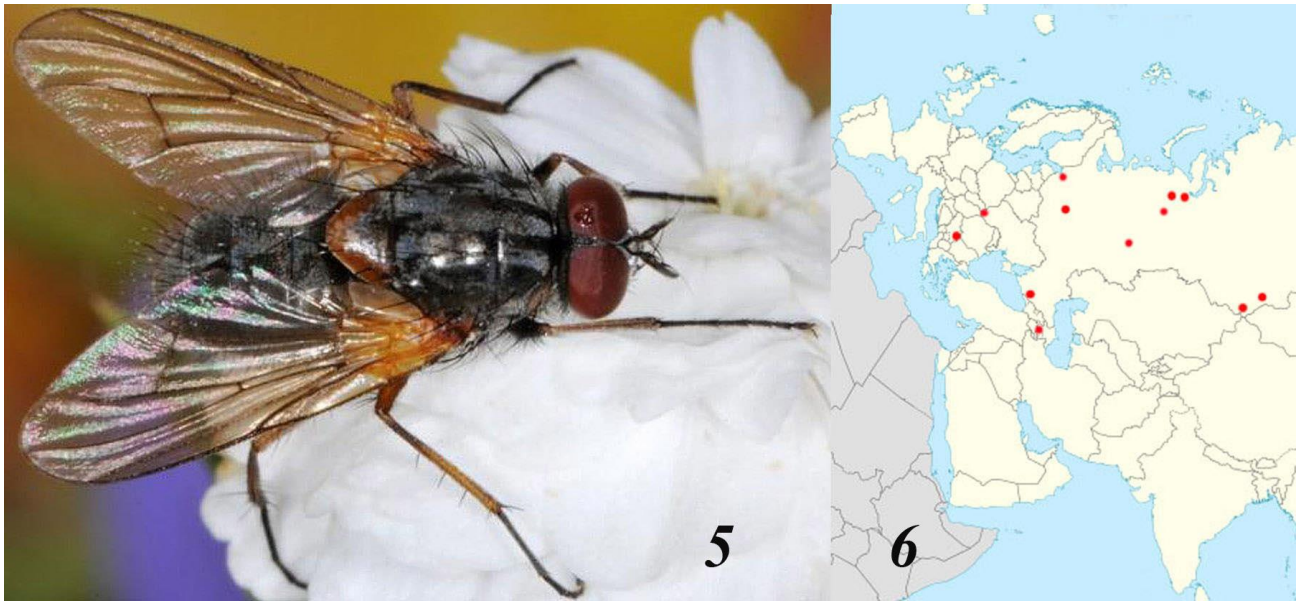

Fig. 5, Fig. 6. *P. zugmayeriae*: 5 – male (Slovakia, Mala Fatra, 49° N, 19° E, 750 m, 22.07.2012, photo Mucha Fero, diptera.info); 6 – our records of the species in Europe and Siberia.

GEORGIA: Kazbegi, (42.66° N, 44.65° E), 1810 m, 07.1983, A. Pont, 1 ♂ (ZIN);

RUSSIA: *Altai Rep*. reg., Seminsky Pass., 51.05° N, 85.59° E, 1650 m, 27–30.06.2016, N. Vikhrev, 5 ♂♂; Turala R., 50.99° N, 85.68° E, 1350 m, 8–12.07.2016, N. Vikhrev, 1 ♂ (all ZMUM); Altai between Ada and Matur Rivers (= 50 km E of Tashtagol, 52.7° N, 88.6° E), Yu. Wagner, 3–12.07.1897, 2 ♀♀ (ZIN);

Bashkortostan reg., 10 km SE of Beloretsk, 53.89° N, 58.5° E, 850 m, 15–19.06.2020, N. Vikhrev, 2 ♂♂, 1 ♀ (ZMUM);

Khanty-Mansy reg., E Ural, 63.818° N, 59.562° E, 1–8.07.2010, K. Tomkovich, 1 ♂, 1 ♀ (ZMUM);

Komi reg., Eletskaya, 67.042° N, 64.22° E, 9.07.2019, N. Vikhrev, 1 ♂ (ZMUM);

Krasnodar reg.: Psekhako Mt., 43.697° N, 40.367° E, 2000 m, 14–18.06.2008, K. Tomkovich, 4 ♂♂; Lagonaki campsite env., 44.09° N, 40.02° E, 1700 m, 26–28.06.2009, K. Tomkovich, 4 ♂♂; Lagonaki, 44.009° N, 39.994° E, 1500–1900 m, N. Vikhrev, 27–30.06.2011, 7 ♂♂; 5–9.06.2015, 1 ♀ (all ZMUM);

Krasnoyarsk reg.: W of Krasnoyarsk, Kryuchkovo, 56.11° N, 92.13° E, 14–23.07.2009, K. Tomkovich, 1 ♀; Krasnoyarsk env., E bank of Yenisey R., Stolby, 55.963° N, 92.745° E, 209–260 m, 18–19.06.2011, K. Tomkovich, 1 ♀; Ergaki NP, 52.84° N, 93.25° E, 1450 m, 27–29.06.2017, N. Vikhrev, 12 ♂♂ (all ZMUM);

Moscow reg.: Ruza env., 55.66° N, 36.05° E, 21–30.06.2015, N. Vikhrev, 1 ♂; E. Erofeeva, 1–10.07.2016, 1 ♀; 11–20.06.2017, 1 ♂, 1 ♀; 21–30.06.2017, 3 ♂♂; 1–11.07.2017, 3 ♀♀; 21–31.05.2018, 27 ♂♂, 1 ♀; 1–10.06.2018, 27 ♂♂, 8 ♀♀; 11–20.06.2018, 31 ♂♂, 12 ♀♀; 21–30.06.2018, 1 ♀; 1–11.07.2018, 5 ♂♂, 5 ♀♀; 1–10.08.2018, 1 ♀; 21–31.08.2018, 4 ♀♀; 1–10.09.2018, 1 ♀; 21–31.05.2019, 16 ♂♂, 1 ♀; 1–11.06.2019, 12 ♂♂, 4 ♀♀; 11–20.08.2019, 3 ♀♀; 21–31.08.2019, 5 ♀♀; 1–10.06.2020, 49 ♂♂, 34 ♀♀; 11–20.06.2020, 18 ♂♂, 44 ♀♀; 21–30.06.2020, 4 ♂♂, 7 ♀♀; 1–10.07.2020, 5 ♀♀; Dmitrov distr., Kostino env., (56.31° N, 37.75° E),

N. Vikhrev, 24.05–2.06.2010, 2 ♂♂; 1.06.2011, 1 ♂; Volokolamsk env., Lama R., 55.99° N, 36.00° E, 29–30.05.2019, M. Yanbulat, 1 ♂ (all ZMUM);

Perm reg., Kungur, Uchleskhoz (= Preduralie NP, presently abolished, 57.36° N, 57.14° E), 9.07.1979, A. Zinovjev, 1 ♂ (ZIN);

Saint Petersburg reg., st. Mozhayskaya, Voronja gora, (59.70° N, 30.13° E), 26.06.1980, A. Zinovjev, 2 ♂♂ (ZIN);

Yamalo-Nenets reg.: Sobj env., 67.06° N, 65.46° E, 26–31.07.2011, K. Tomkovich,1 ♀; Kharp env., 66.81° N, 65.78° E, 10–13.07.2019, N. Vikhrev, 2 ♂♂ (all ZMUM);

SERBIA: Babin Zub, 43.375° N, 22.625° E, 1550 m, 1–8.07.2015, N. Vikhrev, A. Ozerov, M. Krivosheina, 30 ♂♂, 8 ♀♀ (all ZMUM);

UKRAINE: *Zakarpatsky* reg., Kozmeschik, 10 km N of Goverla Mt., (48.21° N, 24.48° E), 28.05.1978, A. Zinovjev, 1 ♂ (ZIN);

DISTRIBUTION. *P. zugmayeriae* is recorded from the majority of Western European countries (Pont, 2013). Data from Eastern Europe and Siberia were quite scarce: Russia: Perm region (Zinovjev, 1981c) and Khanty-Mansi region (Neroika Mt. env., 64.6° N, 59.6° E, in Ural Mts. in the border between Europe and Asia) (Malozemov, 1992). Our records show that it is distributed eastward to the Yenisey River (93° E). In the North, the range of *P. zugmayeriae* extends beyond the Arctic Circle (66.8° N). The southern limit of distribution is at about 56° N, in the lowlands and is extended southwards to 43° N, in the Balkan and Caucasus Mountains.

P. zugmayeriae Schnabl, 1888 *form with widened frons* (Fig. 7, Fig. 8, Fig. 9)

RUSSIA: *Dagestan* reg., Hala-Hol Mts, (41.97° N, 46.37° E), 7.08.1913, L.F. Mlokosiewicz, 1 ♂ (ZIN);

Krasnodar reg., Lagonaki campsite env., 44.09° N, 40.02° E, 1700 m, 26–28.06.2009, K. Tomkovich, 2 ♂; (Guzeripl env.), 44.009° N, 39.994° E, 1700 m, N Vikhrev, 27–30.06.2011, 1 ♂ (all ZMUM).

REMARKS. These four males could have been described as a new species based on several differences from the typical form which are summarized in the identification key. However, we decided to list these specimens as a form of *P. zugmayeriae* with the uncertain taxonomic status because we have only few specimens from different locality each. As follows from the discussion below, only the study of large series would allow to come to reasonable taxonomic conclusions. Male genitalia were examined and were found the same as those of *P. zugmayeriae*.

DISCUSSION

The most important revision of Western Palaearctic *Phaonia* has been done by Hennig (1963), who established synonymies, gave redescriptions, discussed intraspecific variability and offered the first comprehensive identification key. Hennig also discussed the intraspecific variability of the three species of *Phaonia* treated here, although he did not include this information in the key. Apart from the

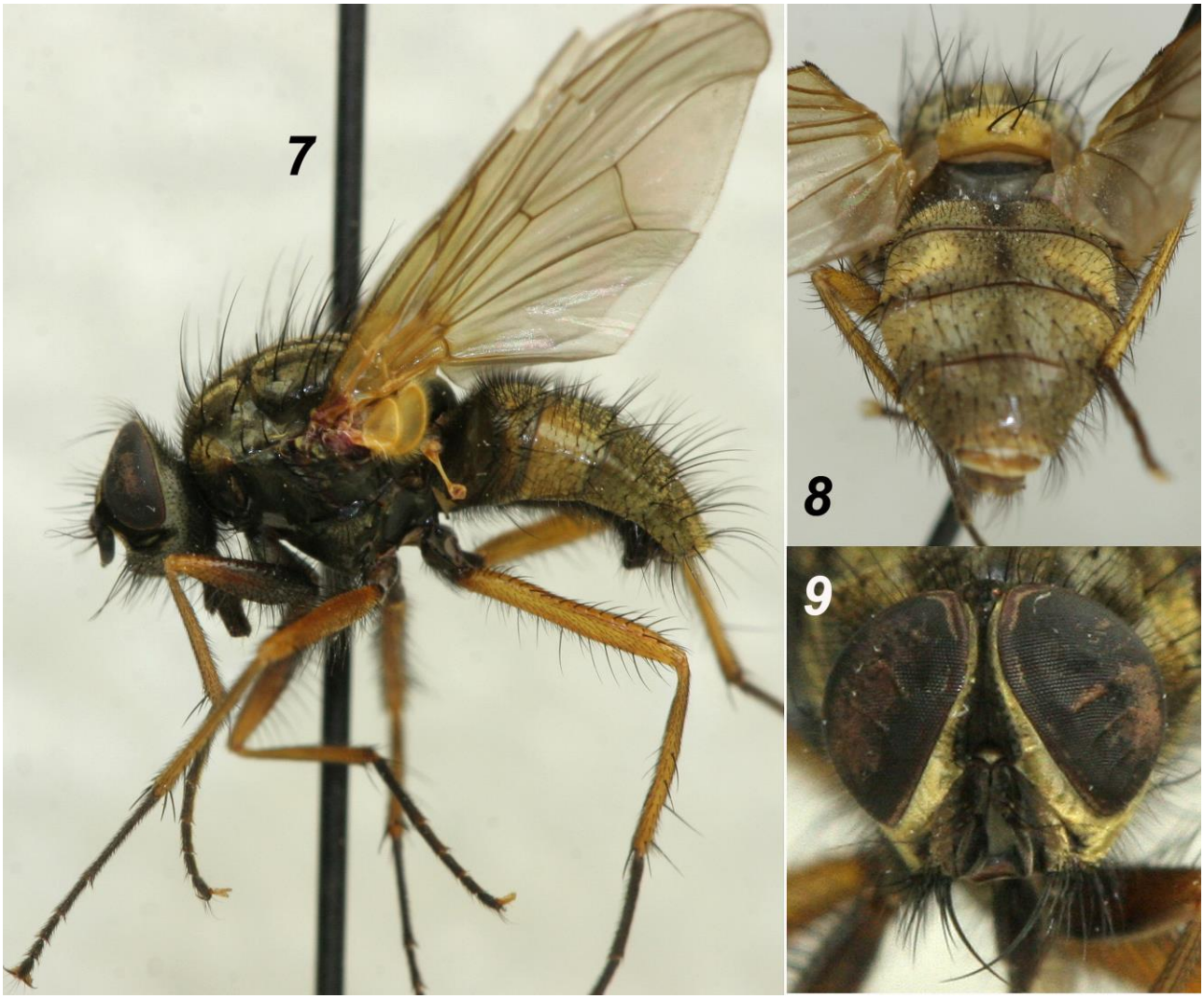

Fig. 7, Fig. 8, Fig. 9. *P. zugmayeriae* Schnabl, 1888 *form with widened frons*, male from Guzeripl: 7 – lateral view, 8 – abdomen, posterior view; 9 – head.

Hennig's key, the only original and very useful key for *Phaonia* was published by d'Assis-Fonseca (1968) for the British fauna. After publication of the Palaearctic Catalogue (Pont, 1986), knowledge of the nomenclature of *Phaonia* almost reached its current state.

The latest key for Central European *Phaonia* (Gregor et al., 2002) duplicates the Hennig's key excluding the non-European species, along with its errors and omissions:

Recommendations of Gregor et al. (2002) are as follows:

couplet 12(♂) or 19(♀). ♂♀: strong *prst ac* absent; notopleuron bare. … *apicalis* Stein

– ♂♀: 1 pair of strong *prst ac* present; notopleuron bare (while in the descriptive notes indicated that notopleuron bare in *P. latipalpis* but haired in *P. zugmayeriae* (Gregor et al., 2002). …17/14

couplet 17(♂) or 14(♀):

– *f1* dark brown to black; postpronotal calli yellow. …*zugmayeriae* Schnabl

– *f1* yellow; postpronotal calli black. …*latipalpis* Schnabl

Recommendations of d'Assis-Fonseca (1968) are as follows (♀♀):

Phaonia: *prst ac* absent; 3 *post dc*; scutellum at least partly yellow:

32 (33) scutellum entirely yellow. …*latipalpis* Schnabl (as *umbraticola*)

33 (32) scutellum darkened at base. …*apicalis* Stein

– *prst ac* present; abdomen dark; scutellum at least partly yellow; at least posterior femora yellow; usually 3 *post dc*:

56 (57) coxae and femora entirely yellow; postpronotal calli dark. …*latipalpis* Schnabl (as *umbraticola*)

57 (56) fore coxa dark, *f1* at least partly dark; postpronotal calli yellow. …*zugmayeriae* Schnabl

These recommendations do not allow many specimens to be identified. For example, what about the not rare specimens with *prst ac*, in which both *f1* and postpronotal calluses are either yellow or both dark? Or what about *P. apicalis* with a pair of strong *prst ac* setae?

We aimed to collect and study as many specimens from different regions as possible, investigate the variability, and then compile a key, taking it into account.

VARIABILITY

P. apicalis. According to Hennig (1963: 800), this species normally has no strong *prst ac* and 2 + 3 *dc*, but specimens with a pair of *prst ac* and 2 + 4 *dc* on one side of thorax were mentioned. Among our material (38 specimens – 7 ♂♂, 31 ♀♀) strong *prst ac* present in 5 ♂♂ and 1 ♀; usually 2 + 3 *dc*, rarely 2 + 4 *dc* (2 specimens) or 2 + 3/4 (3 specimens). Female palpi are more distinctly dilated in the European specimens, less distinctly so in specimens from the Far East. One female from Moscow region has *p* seta on *t1*.

P. latipalpis. According to Hennig (1963: 800) the species has a pair of strong *prst ac* and 2 + 3 *dc*, except for a male from Saint Petersburg region with 2 + 4 *dc*. According to d'Assis-Fonseca's (1968) key in this species strong *prst ac* may be either present or absent. Our material (12 specimens – 3 ♂♂, 9 ♀♀) shows that there is usually *dc* 2 + 3, rarely 2 + 4 *dc* (1 specimen); *prst ac* absent in all females and present in all males. Therefore, both the presence or absence of *prst ac* setae and number of *post dc* setae are variable characters and can hardly serve as diagnostic ones. Female palps are usually dilated, sometimes with normal width.

Thus, *P. apicalis* differs from *P. latipalpis* only in darker colouration of *f1* and scutellum (yellow only on apical part) and also in dark spiracles. Also *P. apicalis* has more slender body (Fig. 1), while the body of *P. latipalpis* is more robust (Fig. 3), but it is difficult to use as a diagnostic character.

P. zugmayeriae. In contrast with previous species, here we examined a large series of 423 specimens in total (Table 1), so our judgment on variability is much more reliable.

We can see that in all localities *prst ac* is almost always present in both sexes; notopleuron around strong anterior seta normally with hairs in males, bare or hairy in females; scutellum darkened basally in males, entirely or almost yellow in females. Other variable characters differ depending on region. In most localities specimens have 2 + 4 *dc* but in Moscow region the majority of specimens have 2 + 3 *dc*.

Table 1. Variability of *P. zugmayeria*

Character / Region	Amount of speciments	*post dc*			strong *ac*			*f1* yellow	*f1* dark	*f1* dark	*ntp* hairy	*ntp* bare	scutellum, % of yellow
		3	4	3/4	0 + 1	1 + 1	1 + 2	*pc* yellow	*pc* yellow	*pc* dark			
Balkan Mts	30 ♂	2	26	2	0	23	7	0	27	3	30	0	40–70
	8 ♀	0	7	1	0	6	2	0	8	0	3	5	80–90
Altai-Sayan Mts	18 ♂	3	12	3	1	15	2	0	15	3	14	4	30–50
	4 ♀	2	2	0	1	3	0	4	0	0	0	4	80–100
N Ural lowlands	4 ♂	1	3	0	0	3	1	0	4	0	3	1	50–70
	2 ♀	0	2	0	0	2	0	0	2	0	0	2	80–100
Caucasus Mts	16 ♂	0	15	1	0	14	2	10	3	3	15	1	30–80
	2 ♀	1	1	0	1	1	0	2	0	0	1	1	100
Moscow reg.	198♂	124	41	33	0	151	47	1	9	188	194	4	40–75
	141 ♀	105	12	24	2	122	17	42	99	0	29	112	90–100
total	423 ♂, ♀												

Note: Balkan Mts – Serbia, Stara Planina;
Altai-Sayan Mts – Altai Republic and Krasnoyarsk reg., Russia, S Siberia;
N Ural lowlands – lowlands near northern Ural Mountains, it includes Khanty-Mansi, Komi and Yamalo-Nenets reg. of Russia;
Caucasus – Krasnodar reg, Russia and Georgia;
Moscow region – NW part of the region.
Abbreviations used in Table 1: *pc* – postpronotal calli; *ntp* – notopleuron.

As Table 1 shows, the colouration generally accepted as typical “fore femur mostly dark, postpronotal calli yellow” (Hennig, 1963; d’Assis-Fonseca, 1968; Gregor et al., 2002) is mostly observed in specimens from the Balkan and Altai-Sayan Mts and from lowlands of the Polar Urals. Our series from the Caucasus has yellow *f1* even in most male specimens. In our largest series from Moscow region, 95% of males have both *f1* and postpronotal calli dark (126 of 188 such males have *f2* and *f3* dark), 30% of females have both *f1* and postpronotal calli yellow, while only 5% of males and 70% of females have “typical” colouration. Therefore, the characters considered in Table 1 may be described as follows: *prst ac* present; 3 or 4 *post dc*; postpronotal calli yellow in females, yellow or dark in males; *f1* dark or yellow; scutellum mostly yellow in females, partly yellow in males; notopleuron around strong anterior seta with hairs in males, bare or hairy in females.

Differences in the colouration of Caucasian specimens are not surprising, the Caucasus is a well-known hot spot of biodiversity. However, the fact that the series from Moscow region which is the center of the Eastern European lowlands shows the most deviating characters is surprising, we have no explanation for this.

Regular collecting in Moscow region also allowed us to estimate the year-to-year variability of the same population. We found that some characters may significantly vary, for example, in females collected in 2018–2019: 65% had *f1* yellow and only 35% *f1* dark; 55% had bare notopleuron. In 2020, the ratio of colouration of fore femur became reversed: 30% *f1* yellow and 70% *f1* dark; number of females with bare notopleuron increased to 80%.

P. zugmayeriae*, form with widened frons*. The narrow frons of a typical *P. zugmayeriae* is shown in Fig. 5 and Fig. 17, the typical distinctly widened frons of this form in Fig. 8. A male from Hala-Hol has *f2* also mostly dark. The male from Lagonaki campsite has abdominal tergites 1 + 2, 3 and 4 yellow laterally, tergite 3 is also yellow on anterodorsal surface (Fig. 9). Two other males have abdomen dark in dorsal view; in lateral view tergite 3 is translucent yellow (Fig. 7). All males have scutellum completely yellow.

MALE GENITALIA

Examination of genitalia often helps to identify at least males. Gregor et al. (2002) provided drawings of terminalia of most European species of *Phaonia* (Fig. 10, Fig. 11, Fig. 12). The drawings are similar to each other, but differ in details. The question is whether these minor differences are helpful for diagnostic use. After re-examination of genitalia of our material we came to a conclusion that the diagnostic value of structure of genitalia seems doubtful for species described here. Even a slightly different angle of view on cercal plate of *P. zugmayeriae* (Fig. 13, Fig. 14) easily renders its shape similar to that in any illustration given by Gregor et al. (2002).

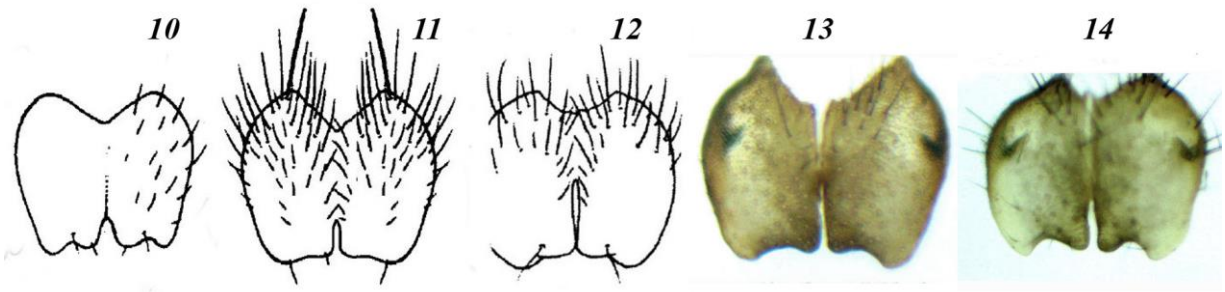

Fig. 10, Fig. 11, Fig. 12, Fig. 13, Fig. 14. Cercal plates of *P. latipalpis* group: 10 – *P. apicalis*; 11 – *P. latipalpis*; 12 – *P. zugmayeriae*; (10–12 from Gregor et al., 2002); 13–14 – *P. zugmayeriae*.

To sum up, high variability of characters was revealed for *P. zugmayeriae*. Despite this, a reliable identification of this species is possible, based on the set of characters recommended in the key below. At least we did not have a single questionable specimen among the 423 examined.

Previously proposed identification keys did not allow the identification of a significant proportion of specimens.

In contrast, the differences between *P. apicalis* and *P. latipalpis* are much less convincing. They are only based on the colouring of *f1*, spiracles and scutellum, darker in *P. apicalis*, and more yellow in *P. latipalpis*.

EXCLUDED SPECIES

Two species of *Phaonia* were placed in identification keys together with species considered here and differed from them only in details of colouration. We have not seen neither the type material nor specimens which presumably belong to these species, the data is taken from literature.

Phaonia szlenyii Mihalyi, 1974. Included in the key of Gregor et al. (2002). The species has short prealar seta (Mihalyi, 1974), it should be related to *P. rufipalpis* Macquart, 1835.

Phaonia tersa Villeneuve, 1936. Included in Hennig's (1963) key as similar to *P. zugmayeriae*. Doubtful taxon is described from a single female specimen. The study of new material is required to clarify the situation.

IDENTIFICATION KEY for *Phaonia latipalpis* group (WEST and CENTRAL PALAEARCTIC FAUNA), ♂♂, ♀♀.

Almost 500 yellow-scutellum specimens of *Phaonia* examined may be distinguished as recommended by the key without any exception.

♂♂, ♀♀

1. Katepimeron with 1–6 distinct hairs (♂ – 2–6, ♀ – usually 1–2 hairs). Prealar seta as long as posterior notopleural, posterior notopleural seta as long as anterior. Male eyes haired densely and long. Wings are intensively yellow at base. Notopleuron haired at anterior part in ♂, bare or haired in ♀. Strong *prst ac* present. (Thoracic spiracles: anterior – yellow, posterior – dark). …**2**

– Katepimeron bare. Prealar seta twice longer than posterior notopleural, posterior notopleural seta 0.5–0.75x as long as anterior one. Male eyes haired sparsely short. Wings are with even light-yellow tint. Notopleuron bare. Strong *prst ac* present or absent. …**3**

2. ♂: Fronto-orbital plates touch, frontal vitta is absent (Fig. 17). Parafacials are narrower than width of postpedicel. Cheek is narrow, 1/6 as wide as height of eye. Abdomen is entirely dark. Scutellum is partly yellow (30–80%). … ***zugmayeriae*** Schnabl

– ♂ (♀ unknown): Fronto-orbital plates are separated by frontal vitta which is wider than diameter of anterior ocellus (Fig. 9). Parafacials is wider than width of postpedicel. Cheek is wide, about 1/3 as wide as height of eye or twice wider than postpedicel. At least abdominal tergite 3 laterally is translucent yellow (Fig. 7, Fig. 8) or abdomen is with extensive yellow pattern (Fig. 8). Scutellum is completely yellow. … ***zugmayeriae*** *form with widened frons*

3. Fore femora dark. Anterior and posterior spiracles are dark. Scutellum is yellow only on apical part. Body is slenderer (Fig. 1). Mid tibia usually has 2 *p* seta. … ***apicalis*** Stein

– Fore femora yellow, sometimes with dark dorsal streak. Anterior and posterior spiracles are yellow. Scutellum is entirely yellow. Body is more robust (Fig. 3). Mid tibia usually has 3 *p* seta. … ***latipalpis*** Schnabl

I-2. The Russian Far East (excluding the Kuril Islands)

In Hennig's (1963) revision of Palaearctic *Phaonia*, there is no information on the Far Eastern fauna, since the material from there was not available in European collections (including ZIN, Saint Petersburg), except for Kato's (1936) record of *P. apicalis* for Japan. In 1971, Shinonaga & Kano (1971) published a large review of

the Japanese Muscidae including *Phaonia*. This is a rare book, but the descriptions given there are repeated verbatim in a later monograph (Shinonaga, 2003), which is much easier to find, and we will refer to it in the text. According to Shinonaga (2003), the Japanese fauna of the *P. latipalpis* group includes five species, of which one species, *P. angustifrons* Shinonaga & Kano, 1971 is recorded from Russia.

The fauna of *Phaonia* of the Russian Far East was studied by Alexey Zinovjev (1980, 1981a, 1981b) who newly described two species from the *P. latipalpis* group: *P. asierrans* Zinovjev, 1981 (we included this species in *P. latipalpis* group, majority of other authors do not) and *P. ommatina* Zinovjev, 1981 from the Kuril Islands (see chapter I-3). Zinovjev's papers were published in Russian and therefore are not well known to non-Russian dipterists.

The study of fauna of the *P. latipalpis* group in China began in 1986.

Our short notes on the Chinese, Japanese and Nearctic species of the *P. latipalpis* group are given in chapter II.

We decided to divide the Far Eastern fauna of the *P. latipalpis* group into subregional faunas and discuss them separately. This chapter covers the Russian Far East mainland (Kamchatka, Khabarovsk, Primorsky regions and large Sakhalin Island) which, in our opinion, may be described satisfactorily. The faunas of the *P. latipalpis* group from the Kuril Islands, Japan and China cannot be satisfactorily described. These territories are shortly reviewed in chapters I-3 and II below.

MATERIAL EXAMINED

Phaonia apicalis Stein, 1915 (Fig. 1, Fig. 2)

Material examined: see chapter I-1.

Phaonia angustifrons Shinonaga & Kano, 1971 (Fig. 15, Fig. 18)

RUSSIA: *Primorsky* reg., Andreevka env., 42.7° N, 131.1° E, 26.07–3.08.2018, N. Vikhrev, 4 ♂♂, 2 ♀♀ (ZMUM); Anisimovka env., (43.17° N, 132.79° E), 20.06.1982, A. Zinovjev, 1 ♀; Gorno-Tayozhnoe, (43.70° N, 132.16° E), 22.08.1962, E. Narchuk , 1 ♀; Kamenushka env., 30 km SE Ussuriyska, (43.622° N, 132.232° E), 7.06.1979, A. Zinovjev, 1 ♂, 3 ♀♀; Partizansk env., (43.15° N, 133.11° E), 27.08–14.09.1978, A. Zinovjev, 2 ♀♀; Vladivostok: Lesnaya Zaimka, (43.26° N, 132.10° E), 26.06.1982, A. Zinovjev, 1 ♀; Okeanskaya, (43.26° N, 132.04° E), 30.09.1978, A. Zinovjev, 1 ♀; Sedanka, (43.2° N, 132.0° E), A. Zinovjev, 27.08.1978, 1 ♀, 1–14.06.1979, 2 ♂♂, 6 ♀♀; 25.07.1979, 1 ♂ (all ZIN); Volchanets env., 42.908° N, 132.726° E, 1–4.08.2019, E. Erofeeva, 2 ♂♂, 1 ♀ (ZMUM).

Sakhalin reg., Sakhalin Isl.: Poluostrov Terpeniya, (49.13° N, 144.25° E), 27.07.1956, N. Violovich, 1 ♂; Yuzhno-Sakhalinsk env.: (46.96° N, 142.76° E), N. Violovich, 29.06.1953, 1 ♀, 16.07.1955, 2 ♂♂,1 ♀, 8.06.1956, 1 ♂; Mt. Chekhova, (46.99° N, 142.83° E), 5.06.1972, M. Kozlov, 1 ♂ (all ZIN).

DISTRIBUTION. Japan and Russian Primorsky and Sakhalin regions. Probably also China (Jilin prov. as *P. jilinensis* and Liaoning prov. as *P. riparia*) (Ma et al., 2002).

Fig. 15, Fig. 16. Far Eastern species of the *P. latipalpis* group: 15 – male *P. angustifrons* Shinonaga & Kano, 1971; 16 – Holotype *P. asierrans* Zinovjev, 1981.

Phaonia asierrans Zinovjev, 1981 (Fig. 16)

Type material. Holotype, ♂: RUSSIA, *Primorsky* reg., Khasansky distr., Barabashevka River flood plain, 43.19° N, 131.50° E, 2.08.1978, D. Kasparyan (ZIN).

Paratypes, 2 ♂♂, 1 ♀: CHINA, *Sichuan* prov., Tachienlu (= Dartsedo = Kangding, 30.05° N, 101.96° E), G. Potanin, 6.06.1893 (ZIN).

Other material. RUSSIA: *Primorsky* reg.: Vladivostok, Sedanka, 43.2° N, 132.0° E, A. Zinovjev, 19.07.1979, 1 ♂, (ZIN); Andreevka env.,42.64° N, 131.13° E, N. Vikhrev, 3–8.08.2018, 1 ♂, 1 ♀ (ZMUM); *Sakhalin* reg., Kunashir Isl., Yuzhno-Kurilsk env., 44.03° N, 145.86° E, A. Zinovjev, 3.07.1979, 1 ♂ (ZIN).

DISTRIBUTION. Known from Russian Primorsky and Sakhalin regions and China.

Phaonia latipalpis Schnabl, 1911 (Fig. 3, Fig. 4)

Material examined: see chapter I-1.

DISCUSSION

P. apicalis. In chapter I, we provided diagnosis of this species, the Far Eastern specimens of *P. apicalis* fit the diagnosis.

P. angustifrons.

DESCRIPTION. *Male*. *Head* is dark. Eyes have rather sparse hairs; facets are moderately enlarged. Fronto-orbital plates touch; frontal setae is only on lower third

of frons. Aristal hairs are 1.5x longer than width of postpedicel. Palpi is dark. *Thorax* is dark, with a pair of black submedian vittae. Scutellum yellow at apex. Mesonotum is with 2 + 3 *dc*, 1 + 1 *ac*, *pra* slightly longer than anterior notopleural seta, the latter is 2x longer than posterior one. Notopleura, meron and katepimeron are bare. Spiracles are brown. *Legs* are with coxae, throchanters, femora and tarsi dark, only tibiae yellow (*f1* yellow only at very apex, *f2* and *f3* dark in basal 4/5–5/6 in males, 2/3–3/4 in females). *t1* without submedian setae, *t2* with 2–3 *p*, *t3* with 4 short *av*, 2 *ad* and 1 *pd*. *Abdomen* is grey dusted with indistinct dark median vitta. Sternite is bare. *Female* differs as follows: frons wide, without crossed interfrontal setae; *prst ac* absent.

REMARKS. Among the fore species of the *P. latipalpis* group described by Shinonaga & Kano, this one is the least problematic due to dark femora. We agree that diagnosis based mostly on leg colouration is not very convincing, but in the Far East mainland we have not seen any specimens with intermediate colour of legs.

***P. asierrans*.**

The species was described in Russian, here are descriptive notes in English.

DESCRIPTION. *Male*. *Head* is dark. Eyes have rather sparse hairs; facets are moderately enlarged. Fronto-orbital plates touch in middle; upper frontal setae weak though extend to level of anterior ocellus. Aristal hairs are longer than width of postpedicel. Palpi is dark. *Thorax* is dark, somewhat bluish, with a pair of black submedian vittae. Scutellum is yellow at apex (the Holotype) or entirely yellow (♂, ♀ from Andreevka). Mesonotum is with 2 + 4 *dc*, 0 + 1 *ac*, *pra* slightly longer than posterior notopleural seta, anterior notopleural distinctly longer than posterior one. Notopleura with 1 hair near anterior seta and 4–5 around posterior one. Meron are bare, katepimeron have 4–5 hairs. Anterior spiracle is white, posterior one is brownish-yellow. *Legs* are yellow including posterior coxae (Zinovjev, 1981): coxae dark), tarsi are black, f*1* is yellow (the Holotype) or darkened in basal half (♂ from Andreevka). *t1* is without submedian setae, *t2* with 2 *p*, *t3* with 2 *av*, 2 *ad* and 1 *pd*. *Abdomen* is grey dusted with indistinct dark median vitta. Sternite 1 have several hairs. *Female* differs as follows. Frons is wide, without interfrontals. Notopleura has only 1 hair placed near posterior seta. Hairs are on katepimeron and sternite 1 is weaker.

REMARKS. *P. asierrans* was not included in the *P. latipalpis* group neither by Zinovjev (1981a,b) nor by Chinese authors (Ma et al., 2002). Zinovjev (1981b) supposed that it is related to *P. errans* Miegen, 1826. According to Ma et al. (2002), it is related to Oriental *P. simultans* Malloch, 1931. We do not share these opinions, since at least *P. asierrans* differs from other species of the *P. latipalpis* group less than *P. zugmayeriae*.

IDENTIFICATION KEY FOR *Phaonia latipalpis* group (Russian Far East), ♂♂, ♀♀.

1. Katepimeron have 4–5 hairs. Notopleuron have hairs around posterior seta. Strong *prst ac* is absent. Frontal setae extend to level of anterior ocellus. Sternite 1 setulose. Anterior spiracle is whitish. …***asierrans*** Zinovjev

– Katepimeron is bare. Notopleuron is bare. Strong *prst ac* usually present, rarely is absent. Frontal setae are present only on lower half of frons. Sternite 1 is bare. Anterior spiracle is yellow or dark. …**2**

2. Fore femur is yellow, at most with dark dorsal streak. Anterior and posterior spiracles are yellow. Scutellum is entirely yellow. … ***latipalpis*** Schnabl

– At least fore femur is mostly dark. Anterior and posterior spiracles are dark. Scutellum is yellow only at apex. …**3**

3. *f2, f3* are yellow. Aristal hairs are 0.5-0.8x as long as width of postpedicel. Strong *prst ac* usually present in ♂ and is absent in ♀. ♂: Facets of the eyes not enlarged. Mid tibia usually has 2*p* seta. … ***apicalis*** Stein

– *f2, f3* are dark. Aristal hairs are 1.3x as long as width of postpedicel. Strong *prst ac* present in ♂, is absent in ♀. ♂: Facets of the eyes are enlarged, 1.2–1.6 times larger than the facets in the lower part of the eyes. Mid tibia usually has 3*p* seta. …***angustifrons*** Shinonaga & Kano

I-3. The Kuril Islands

MATERIAL EXAMINED

Phaonia angustifrons ommatina Zinovjev, 1981 **stat. nov**. (Fig. 19, Fig. 20)

Phaonia ommatina Zinovjev, 1981

Fig. 17, Fig. 18, Fig. 19, Fig. 20. Heads of *Phaonia*, ♂♂: 17 – *P. zugmayeriae*; 18 – *P. angustifrons* from Far East mainland; 19 – *P. angustifrons ommatina*, with widened frons 20 – *P. angustifrons ommatina*, paratype.

Type material. Holotype, ♂: RUSSIA, *Sakhalin* reg., Kunashir Island, Yuzhno-Kurilsk env., volcano Mendeleeva, (44.0° N, 145.8° E), 9.07.1979, A. Zinovjev, (ZIN). Paratypes: the same lebel as the holotype, 4–9.07.1979, 16 ♂♂, 1 ♀ (ZIN and ZMUM); Iturup Island, (45.20° N, 147.84° E), 25.06.1968, V. Rikhter, 1 ♂ (ZIN).

Other material: RUSSIA: *Sakhalin* reg.: Iturup Isl., Rybaki, 5 km SW of Kurilsk, (45.20° N, 147.84° E), 22–23.06.1968, V. Rikhter , 1 ♂, 1 ♀ (ZIN); Kunashir Isl.: Kurilsky NR, caldera of the Golovnin volcano, 43.841° N, 145.509° E,

25–29.08.2009, YPT, I. Melnik, 1 ♀, K. Makarov, A. Zaitsev, 1 ♀ (all ZIN), 3–5.07.2014, I. Gomyranov, 3 ♂♂, 5.07.2014, T. Galinskaya, 1 ♂ (all ZMUM); Filatovsky cordon, 44.11° N, 146.01° E, 18–19.07.2014, I. Gomyranov, 1 ♂ (all ZMUM); Tretyakovo village, 43.59° N, 145.38° E, 13–22.09.2009, YPT, I. Melnik, 3 ♀ (ZIN), 8–15.07.2014, I. Gomyranov, 8 ♂♂ (ZMUM); Simushir Isl., volcano Milna env., (46.82° N, 151.78° E), 18.07.1958, N. Violovich, 1 ♂ (ZIN).

DISCUSSION. Zinovjev (1981b: 625) gave the following diagnosis of *P. ommatina*: "Similar to *P. angustifrons* but the colouring of femora; scutellum and wings are lighter. Male frons is on average narrower than in *P. angustifrons*, cerci have a little bit different shape. Abdomen is less dusted than in *P. angustifrons*, with less distinct median vitta. Male eyes are with upper facets more strongly enlarged (1.8–2.1 times larger than lower facets, while in *P. angustifrons* 1.2–1.6 times) (this character is unique for the *P. latipalpis* group)."

We reexamined Zinovjev's type series and a series of recently collected specimens and came to the following conclusions.

a. We have not found any differences in wing colour, shape of cerci and dusting of abdomen.

b. Colour of femora is lighter than that of *P. angustifrons*, *f2* and *f3* are dark only at basal 1/2 to 1/5, sometimes *f3* is entirely yellow.

c. Colour of scutellum is more yellow than that of *P. angustifrons*, (varies from 50% of surface to almost entirely (90%) yellow).

d. Most specimens of the type series of *P. ommatina* have closely approximated eyes, fronto-orbital plates are almost invisible as in Figure 20. Unfortunately, the character is also variable, several freshly collected males in ZMUM have fronto-orbital plates divided by dark frontal vitta (Fig. 19) i.e., eyes are separated more widely than in *P. angustifrons*.

e. The size of upper facets of male eyes is also variable: they are enlarged strongly or moderately. Zinovjev did not include male specimens from the Kuril Islands with moderately enlarged facets in the type series of *P. ommatina* but identified them as *P. angustifrons*.

Therefore, *P. ommatina* is undoubtedly similar to *P. angustifrons*. There is a curious peculiarity of the distributions of these taxa. *P. ommatina* is recorded only from Kunashir and Shikotan Islands. Meanwhile, to south of the Kuril Islands, in Japan, the typical *P. angustifrons* occurs, and to north of the Kuril Islands, in Sakhalin Island, the typical *P. angustifrons* is again recorded. We suggest the following explanation to these observations. Japan, Sakhalin, and the Kuril Islands had divided from the continent and each other when the sea level had risen, that is, ca. 15.000 years ago. Since then, large populations haven't changed much, whereas small islands' populations have changed under influence of genetic drift and show wide ranges of intra-population variability.

That is why we prefer to identify *P. ommatina* as an insular subspecies of *P. angustifrons* – *P. angustifrons ommatina* Zinovjev, 1981 **stat. nov**.

We believe that Zinovjev's diagnosis of *P. ommatina* have to be corrected for the following reasons. (1) It requires changing of generally accepted diagnosis of *P. angustifrons,* a much widely distributed and earlier described species. (2) Using strongly enlarged eye facets as the main diagnostic character leaves unresolved the question of how to distinguish females of *P. ommatina*. We offer the following diagnosis of the Kuril subspecies:

– ♂ ♀: *f2* and *f3* are only basally dark, sometimes *f3* is entirely yellow. Scutellum is yellow in apical 50 to 90% of surface. Anterior and posterior spiracles are yellow or brownish-yellow. ♂: Facets of the eyes are usually greatly enlarged. … ***angustifrons ommatina***

– ♂ ♀: *f2* and *f3* are dark, yellow only at apex. Scutellum is yellow only at very apex. Anterior and posterior spiracles are dark. ♂: Facets of the eyes are moderately enlarged. … ***angustifrons angustifrons***

P. latipalpis Schnabl, 1911 *Kuril form*

RUSSIA: *Sakhalin* reg., Kunashir Isl.: Kurilsky NR, Andreevsky cordon, 43.54° N, 145.37° E, 6–8.07.2014, I. Gomyranov, 3 ♂♂; Filatovsky cordon, 44.11° N, 146.01° E, 18–19.07.2014, I. Gomyranov, 1 ♂ (all ZMUM); Mendeleevo env.: road to Sernovodsk, (43.95° N, 145.68° E), 9.06.1968, V. Rikhter, 1 ♂ (ZIN), 6.10.1968, K. Gorodkov, 1 ♀ (ZIN), Tretyakovo env., 43.59° N, 145.38° E, 13–22.09.2009, YPT, I. Melnik, 1 ♀ (ZIN); Yuzhno-Kurilsk env., (44.0° N, 145.8° E), 25.09.1967, V. Sychevskaya, 1 ♀ (ZMUM); 2–7.07.1979, A. Zinovjev, 5 ♂♂, 2 ♀♀ (ZIN); Shikotan Isl.: Malokurilsk env., 43.84° N, 146.91° E, 22.09.1968, K. Gorodkov, 1 ♀ (ZIN); Tserkovnaya bay, 43.75° N, 146.70° E, 10–14.06.2012, Yu. Sundukov, 2 ♀♀ (ZMUM).

REMARKS. It is remarkable that the Kuril specimens of *P. latipalpis* also somewhat differ from those from the Far East mainland: fore femur has colouration from entirely yellow to mostly darkened (as in Japanese specimens shown in Fig. 21, Fig. 22). We do not share the opinion of several Japanese and Chinese authors that these colour variations should be regarded as separate species. We interpret such deviation as some insular effect and consider all Kuril specimens with yellow *f2* and *f3* as *Kuril form* as *P. latipalpis*.

IDENTIFICATION KEY FOR *Phaonia latipalpis* group (Kuril Islands), ♂♂, ♀♀.

– *f2* and *f3* entirely yellow. Scutellum entirely yellow. ♂: Facets of eyes not enlarged. … ***latipalpis*** Schnabl

– *f2* and *f3* are dark basally. Scutellum is yellow in apical 50 to 90% of surface. ♂: Facets of eyes are enlarged. … ***angustifrons ommatina*** Zinovjev

II. Short notes on faunas of the *P. latipalpis* group of China, Japan and Nearctic region

China

The study of fauna of the *Phaonia latipalpis* group in China began in 1986 with the description of *P. subommatina*. Nowadays the Chinese fauna of the

P. latipalpis group includes 17 species of which 15 were newly described from China: Xue & Chao (1998); Ma et al. (2002,); Xue et al. (2006); Wu et al. (2015). Most articles are written in Chinese, only a small part of the data is available in English. The majority of species differ from each other by details of colouration of scutellum, femora etc., therefore, the validity of them seem questionable. We found it impossible to make any assumptions about the Chinese fauna until a revision of the previously described and recorded species will be published.

Japan

According to Shinonaga (2003), Japanese fauna of the *P. latipalpis* group includes 5 species: *P. angustifrons* Shinonaga & Kano, 1971; *P. dorsolineata* Shinonaga & Kano, 1971; *P. hydrocharis* Shinonaga & Kano, 1971; *P. japonica* Shinonaga & Kano, 1971 and *P. latipalpis* Schnabl, 1911. Recorded by Kato (1936) *P. apicalis* was excluded from Japanese fauna by Shinonaga (2003). *P. angustifrons* was considered in chapter I-2.

Through scientific exchange, some Japanese specimens were deposited in European museums, and we studied the specimens kept at MNHN and ZIN: they are paratypes or have identification labels of Shinonaga himself.

MATERIAL EXAMINED

P. dorsolineata Shinonaga & Kano, 1971 (Fig. 21)

JAPAN, Kyushu Isl., Kagoshima, Yakushima: Kusugawa-hodo, 18.05.1972, S. Shinonaga, 2 ♂♂ (MNHN and ZIN); Kosugidani, 16.05.1972, S. Shinonaga, 1 ♀ (MNHN).

P. hydrocharis Shinonaga & Kano, 1971

Paratype 1 ♂: JAPAN, Honshu, Nagano prefecture, Karuizawa, (36.4° N, 138.6° E), 27.07.1970, R. Kano (MNHN).

P. japonica Shinonaga & Kano, 1971 (Fig. 22)

Paratypes: JAPAN, Honshu, Fukushima prefecture, Inawashiro (37.55° N, 140.10° E), 1 ♂, 1 ♀ (MNHN); 1 ♂ (ZIN).

REMARKS. Examined specimens of *P. japonica* have scutellum entirely or almost yellow; darkening on *f1* as broad basal ring, katepimeron has 1–2 setulae.

Shinonaga's (2003) identification key is based mostly on details of colouration of *f1* and scutellum, the key has obvious drawbacks.

a. It is not indicated that the key is for male only, females which have no *prst ac* cannot be identified.

b. Sometimes the key contradicts descriptions.

c. Some significant characters were overlooked. For example, all Japanese specimens of *P. japonica* have setulae on katepimeron but this character was not mentioned in Shinonaga & Kano (1971) or Shinonaga (2003).

Our attempts to identify Shinonaga's specimens by Shinonaga's (2003) key were not successful. Zinovjev (1980: 913) came to the same conclusions and excluded species of the *P. latipalpis* group from his review of Far Eastern *Phaonia*.

Nearctic

Fig. 21, Fig. 22. Japanese specimens in MNHN collection: 21 – specimen identified by S. Shinonaga as *P. dorsolineata*; 22 – paratype of *P. japonica*.

MATERIAL EXAMINED

Phaonia apicalis apicalis Stein, 1915
Phaonia apicalis Stein, 1915: Huckett (1965)
No Nearctic material seen. Palaearctic material see Part I-1.
DISTRIBUTION. Holarctic. In Nearctic Alaska and N Canada (Huckett, 1965).

Phaonia apicalis apicata Johannsen, 1916
P. apicata Johannsen, 1916
P. apicata Johannsen, 1916: Malloch (1919)
P. solitaria Stein, 1920; **syn. nov**.
P. apicalis apicata Johannsen, 1916; **stat. nov**.
CANADA: *Ontario*, Ottawa, Nepean, 45.32° N, 75.72°W, 16.06–2.07.2016, J. O'Hara, 5 ♀♀ (1 ♀ with 1*p* on *t1*, all without *prst ac*, all 2 + 3*dc*) (ZMUM, ISEA).
USA: *NC*, Highlands, (35.06° N, 83.20°W), 1150 m, 25.05.1957, J.R. Vockeroth, 1 ♂; 29.08.1957, J. C. Chillcott, 1 ♂ (with *prst ac*) (ZIN); *RI*, Coventry Co, 41.69° N, 71.55°W, 8–14.05.2017, A. Medvedev, 1 ♂ (without *prst ac*) (ZMUM).
DISTRIBUTION. Canada and USA.

Phaonia bysia Walker, 1849
USA, ***NC***, Highlands, (35.06° N, 83.20°W), 1150 m, 4.06.1957, J.R. Vockeroth, 1 ♀; ***TN***, Great Smoky Mountains National Park, 1550 m, 23.08.1957, J.C. Chillcott, 1 ♂, with det. label by Vockeroth (all ZIN).
DISTRIBUTION. Canada and USA.
REMARKS. According to Malloch (1923), humeri (postpronotal calli) is at least partly yellow. In our specimens, postpronotal calli are entirely dark.
DISCUSSION on the Nearctic fauna.

Unfortunately, there is still no major revisional study on the Nearctic Muscidae like the Hennig's study on the Palearctic fauna. The Nearctic fauna of *Phaonia* was reviewed by Malloch (1923); the key for *Phaonia* of Northern Canada, Alaska and Greenland was published by Huckett (1965). We restrict our review to three species we were able to examine.

P. a. apicalis. Huckett (1965) listed the species for the USA, Alaska and Canada: Northwest Territories, Manitoba and Quebec. Given the fact that some our specimens are from Kamchatka, its presence in North America is not surprising. Huckett indicated that antenna was entirely dark, so his North American material represents the Palaearctic subspecies of *P. a. apicalis*.

P. a. apicata. According to the original description of *P. apicata*, a pair of *prst ac* is either present or absent in males (Johannsen, 1916): "Male ... one pair of inner dorso-centrals in front of the transverse suture present, though but small in some specimens and absent in one ..."; in females *prst ac* is absent. Material we examined fits the description: one our male has *prst ac* present, another one does not, in all 5 females *prst ac* is absent. One of our 5 ♀♀ has *p* seta on *t1*. Thus, the variability of *P. apicata* is quite similar to that of *P. apicalis*, there are only some differences in colouration among these taxa. We propose to identify *P. apicata* as *P. apicalis apicata* Johannsen, 1916; **stat. nov.**, a Nearctic subspecies of nominotypical *P. a. apicalis*.

SYNONYMS. According to Malloch (1923), the only difference between *P. apicata* and *P. solitaria* is that the latter has *prst ac*. However, according to above discussion, *P. apicata* may or may not have *prst ac*. Therefore, *P. a. apicata* Johannsen, 1916 = *P. solitaria* Stein, 1920 **syn. nov.**

EXCLUDED SPECIES. At least two more species of Nearctic *Phaonia* should belong to the *P. latipalpis* group. We know them only from Malloch (1923) publication.

Phaonia curvinervis Malloch, 1919. Margins of postpronotal calli, posterolateral margins of mesonotum, scutellum and margins of pleural sclerites are yellowish. No *prst ac*; *dc* 2 + 3; *pra* as long as in *P. apicalis*; notopleuron and meron are bare. *t1* is with 2 *ad* and 2 *p*. Vein R4 + 5 slightly curved forward apically.

Phaonia winnemanae Malloch, 1919. Similar to *P. a. apicata*, but postpronotal calli, posterolateral margins of mesonotum and tarsi is yellow.

IDENTIFICATION KEY FOR Nearctic *Phaonia latipalpis* group

1. *pra* is about 0.5x as long as posterior notopleural seta; the latter is slightly shorter than anterior one. Cheek is distinctly narrower than postpedicel. …***bysia*** Walker

– *pra* is about 2.5x longer than posterior notopleural seta and 1.5x longer than anterior one. Cheek is as wide or wider than postpedicel. ...**2**

2. Postpedicel at base and pedicel are yellowish. *f1* is yellow or slightly darkened; trochanters are yellow. The USA and Canada. …***a. apicata*** Johannsen

Antenna is dark. *f1* is mostly dark; trochanters are brown. Palaearctic and North of America. …***a. apicalis*** Stein

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ГРУППА ВИДОВ *PHAONIA LATIPALPIS* (DIPTERA, MUSCIDAE): ОБЗОР РОССИЙСКОЙ ФАУНЫ И ЗАМЕТКИ ПО ФАУНАМ СОПРЕДЕЛЬНЫХ ТЕРРИТОРИЙ

Н.Е. Вихрев, Е.А. Ерофеева

Зоологический музей МГУ им. М.В. Ломоносова, Россия
e-mail: nikita6510@yandex.ru

Рассмотрена группа видов *Phaonia latipalpis* (Diptera, Muscidae). Были прояснены некоторые проблемы таксономии группы *P. latipalpis*. Так, на основе изучения более 400 образцов из нескольких отдаленных местностей была исследована изменчивость *P. zugmayeriae*. Такой подход может оказаться полезным для других таксонов Phaoninae. Фауна группы *P. latipalpis* Западной Палеарктики, Дальнего Востока России и Курильских островов рассматривалась отдельно, предложены идентификационные ключи для каждой из этих территорий. Кратко рассмотрена фауна группы *P. latipalpis* Китая, Японии и Неарктического региона. Предложен один новый синоним: *P. apicata* Johannsen, 1916 = *P. solitaria* Stein, 1920, **syn. nov**. Предложено понизить с видового до подвидового два таксономических статуса: *P. ommatina* Zinovjev, 1981 = *P. angustifrons ommatina* Zinovjev, 1981 stat. nov.; *P. apicata* Johannsen, 1916 = *P. apicalis apicata* Johannsen, 1916 stat. nov.

Ключевые слова: Diptera, Muscidae, группа *Phaonia latipalpis*, новые находки