NEW DATA ON TWO RARE SPECIES OF FANNIA
(DIPTERA, FANNIIDAE)

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Abstract. Two new synonymies are proposed: Fannia fasciculata Loew, 1873 = F. baihualingensis Yan, Xu, Wang & Zhang, 2019, syn. nov.; Fannia xiaoi Fan, 2000 = F. fani Wang & Wu, 2017, syn. nov. F. fasciculata is supposed to be originated from S-E Palaearctic, though it was described from Europe. Specimens previously identified as F. fani are regarded as a case of intersex males of F. xiaoi. Taxonomy and distribution of both considered species are discussed and specified. F. fasciculata and F. xiaoi were newly recorded for Russia.

Keywords: Diptera, Fanniidae, Fannia fasciculata, Fannia xiaoi, new records, synonymies.
INTRODUCTION

The genus *Fannia* (Robineau-Desvoidy, 1830) is large and taxonomically difficult. Most species of *Fannia* are rather similar blackish flies, often the reliable identification of them requires examination of male genitalia. In several cases the differences in male genitalia proposed as diagnostic ones are minute and doubtful. No wonder that under those circumstances quite many species of *Fannia* are poorly known or known only by their type(s) and original description. However, *Fannia fasciculata* Loew, 1873 and *Fannia xiaoi* Fan, 2000, considered in present paper, are different cases, because males of these species are unmistakable due to a modified f3 (with a tubercle near the apex covered with long ventral setae); characteristic genitalia and several other characters. It is difficult to imagine that specimens of such remarkable species have been overlooked in entomological collections so they appear to be really rare species. Fortunately, both species were newly found in Russia, the specimens are stored in the collection of Zoological Museum of Moscow University. New data on their taxonomy and distribution are outlined in this paper.

*Fannia fasciculata* Loew, 1873

*Fannia baihualingensis* Yan, Xu, Wang & Zhang, 2019, *syn. nov.*

Figs 1, 3–8

**Taxonomic notes.** *Fannia fasciculata* cannot be confused: abdominal tergites (at least 3 and 4) yellow with contrasting median vitta formed by black triangles; f3 strongly curved; near apex it has a tubercle with about 20 long (twice as long as femur width) ventral setae (Figs 5–6); t2 widened in basal 1/3 and apical half, both widened parts covered with ventral hairs (Fig. 7); tar2-1 (for this abbreviation see Vikhrev 2011, 60) projected and flattened ventrally; coxa bare at inner posterior margin; lower calypter projecting; genitalia characteristic: surstyli very long and slender, cercal plate small, bifurcate at apex (see Figs 1, 3, 4).

*F. fasciculata* was described from Baile Herculane (44.88°N 22.41°E), Romania. Since that time only two more records were known: Czechia (Rozkosny et al. 1997) and Croatia (Pont 2013), the female of *F. fasciculata* is still unknown.

Recently, a new species *Fannia baihualingensis* Yan, Xu, Wang & Zhang, 2019 was described from China, Yunnan prov., Gaojing, Baihualing [more detail coordinates are 25.3°N 98.8°E, but the range of possible altitudes is very wide, from 700 to 3100 m asl], 25.07.2015, L.P. Yan & C. Wang, ♂ Holotype and 2 ♂ paratypes (Museum of Beijing Forestry University, China) (Yan et al. 2019). I do not agree with the authors that it is a new species, I believe that we face just a new record of *F. fasciculata*.

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Figs 1–4. Male terminalia: 1 — *Fannia baihualingensis*, ventral view (from Yan et al. 2019); 2 — *F. curvipes*, ventral (2a) and lateral (2b) views (from Chillcott 1961); 3 — *F. fasciculata*, ventral view (from Hennig 1955); 4 — *F. fasciculata*, ventral view (from Rozkosny et al. 1997)

Рис. 1–4. Гениталии самца: 1 — *Fannia baihualingensis*, вентрально (из Yan et al. 2019); 2 — *F. curvipes*, вентрально (2a) и латерально (2b) (из Chillcott 1961); 3 — *F. fasciculata*, вентрально (из Hennig 1955); 4 — *F. fasciculata*, вентрально (из Rozkosny et al. 1997)
Synonymy. Yan et al. (2019) compared *F. baihualingensis* with similar *F. curvipes* Malloch, 1924 (Nearctic species) and *F. fasciculata*. Let us regard their results. Yan et al. (2019) describe the terminalia of their species (Fig. 1) as follows: “cercus of *F. baihualingensis* is slightly rounded, with the hook-like projection on its lower margin strongly curved outward.” Chillcott (1961) gave a ventral view on terminalia of *F. curvipes* (Fig. 2) and described them as follows: “Cercal plate very slender on apical half and prolonged into an upcurved process.” I cannot find this process on Chillcott’s ventral drawing (Fig. 2a), although on his lateral view (Fig. 2b) this process is clearly drawn. The differences between two species can be summarized as follows:
— Legs yellow, only tarsi black. Cercal plate slender. Nearctic species distributed in north-east of USA ............... *curvipes* Malloch
— Legs black, only knees yellowish. Cercal plate less slender. China, Yunnan ................. *baihualingensis* Yan, Xu, Wang & Zhang
Yan et al. (2019) illustrated genitalia of *F. fasciculata* by Hennig’s (1955, pl. 4, fig. 75) drawings (Fig. 3). Hennig was among pioneers of diagnostic use of the male genitalia, his drawing of Fanniidae (Hennig, 1955) are simplified but clear and helpful. (In my opinion Hennig’s approach is more useful than too intricate Chillcott’s drawings. For example, Hennig (1955, pl. 4, fig. 76) placed the drawing of the genitalia of *Fannia armata* Meigen, 1826 (another species with remarkably long surstyli) near that of *F. fasciculata*, so it is easy to see the difference between these species.) Based on Hennig’s drawing Yan et al. (2019) implied that the cercal plate of *F. fasciculata* has no curved process, while that of *F. baihualingensis* has. However, there is a more detail draw-

Figs 5–8. *Fannia fasciculata*: 5 — specimen from Moscow region; 6 — specimen from S Siberia; 7 — mid leg, posterior view; 8 — distribution: previous records — black spots, new records — red spots
Рис. 5–8. *Fannia fasciculata*: 5 — экземпляр из Московской области; 6 — экземпляр из южной Сибири; 7 — средняя нога, вид сзади; 8 — распространение: ранее опубликованные находки — черным цветом, новые находки — красным
New data on two rare species of Fannia (Diptera, Fanniidae)...
F. xiaoi has several unusual diagnostic characters. Eyes with sparse but rather long whitish hairs. t2 with a set of 8 elongated preapical setae (Fig. 10) resembling those in Fannia spathiophora Malloch, 1918. tar2-1 curved and with a row of 8–9 a setae as long as tarsus width (Fig. 12). fβ arcuate, in apical 1/3 with a large tubercle bearing 6–7 av and 5 pv very long (3/4 as long as length of t3) (Fig. 11). Apex of abdomen bears a dense tuft of long, waved, posteriorly directed setae, which is well seen on intact specimens (Fig. 9) (similar to that in Fannia barbata Stein, 1892 but even longer).

F. xiaoi has intricate terminalia (Figs 13–14). Cercal plate large and consists of two parts. Basal part bare medially while on lateral borders and especially posteriorly densely covered with long setae. Apical part of cercal plate long and stout, at apex bifurcated in two leaf-like processes (Fig. 15). Surstylus stout, deeply bifurcated in two processes: on ventral view inner process longer and more slender, outer one shorter and more stout (Figs 17–18); on lateral view outer process strongly downcurved and rounded at apex, inner process less rounded and slightly upcurved at apex (Fig. 16).

In Figs 16–18 several illustrations of the surstylus of F. xiaoi are shown. Note that Figs 17–18 demonstrate that minor changes of the angle of ventral view lead to serious differences in a visible shape of the same sclerite (as recently discussed in Vikhrev, Yanbulat 2019).

**Synonymy.** Recently Fannia fani Wang & Wu, 2017 was described from China, Heilongjiang, Wuying [48.1°N 129.2°E], 12.05.1979, J. Shen. It looks like a simplified F. xiaoi: parafacials less widened; tar2-1 not modified, without elongated a setae; t2 without set of elongated preapical setae; fβ less arcuate, with a ventral tubercle less developed, this tubercle with only 4 shorter av setae; cercal plate with only short setulae on the same places (Figs 19–20). The statement by Wang et al. (2017) of 1+1 katepisternal setae instead of 0+1 in F. xiaoi is not correct, the latter also has 1+1 in both specimens examined by me. Beside the absence of long se-
tae, the genitalia of *F. fani* is the same as those of *F. xiaoi* (see Fig. 20 taken from the original description Wang et al. 2017, 98, fig. 1c). Based on examination of my specimen I came to the same conclusion. Thus, there are only negative differences, such situation is typical for intersexual specimens frequently reported in Fanniidae (Gregor 1994). I regard the specimens described as *F. fani* as intersex males of *F. xiaoi*, so *Fannia xiaoi* Fan, 2000 = *F. fani* Wang & Wu, 2017, syn. nov.

**Relationships.** Chillcott (1961) divided the large genus *Fannia* into several species groups. His division was later generally accepted for the Palaearctic *Fannia* (Rozkosny et al. 1997). Of course, these hypotheses should be sooner or later checked by molecular phylogeny. Wang et al. (2009 and 2017) placed *F.
xiaoi and F. fani in the F. carbonaria species group. In my opinion the authors reasoning is groundless. To begin with the fact that there is no characteristic of F. carbonaria group neither in (Wang et al. 2009) nor in (Wang et al. 2017). I believe that F. xiaoi is related to F. barbata. These species share the following uncommon characters: a short and wide post-pedicel; remarkably wide parafacials; hairy eyes; the apex of abdomen with a tuft of long setae. Both species are restricted to a spring time (F. barbata — early May, F. xiaoi — late May).

**New records.** Russia: Buryatia reg.: Ust-Zaza [53.2°N 111.7°E, 970 m asl], 31.05.1969, A. Rasnitsin & V. Zherikhin, 1♂; Baisa [53.98°N113.59°E, 830 m asl], 28.05.1969, V. Zherikhin, 1♂; Krasnoyarsk reg., Tanzybei env., 53.07°N 93.13°E, 450 m asl, 28–29.05.2018, N. Vikhrev, 1 intersex ♂ (all Zoological Museum of Moscow University, Russia).

**Distribution.** China: Inner Mongolia and Heilongjiang; Russia: Buryatia and Krasnoyarsk regions.

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