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Fanniidae (Diptera) from the Kamchatka Peninsula and the North Kuril Islands

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Abstract Thirteen species of the genus *Fannia* of the family Fanniidae (Diptera) are recorded from the Kamchatka Peninsula and the North Kuril Islands, Russia. Of these, five species and seven species are new records from the Kamchatka Peninsula and the North Kuril Islands, respectively. About half of the species known from this region have a Holarctic distribution.

Key words: Fanniidae, Diptera, Palaearctic region, Holarctic region, Kamchatka Peninsula, Kuril Islands, new record.

The Fanniidae is a small family and consists of about 260 species in four genera. Recent work shows that the Fanniidae is evidently the sister-group of the family Muscidae and family Anthomyiidae or of an even larger clade.

The family Fanniidae has spread throughout world, though only a small number of species are known from the Neotropical, Afrotropical, Oriental and Australian regions. One hundred and four species are known from the Palaearctic region and 101 species from the Nearctic region. Some 32 species are common to both regions.

Chillcott (1961) discussed the relationship between the Nearctic and Palaearctic fauna of the Fanniidae, and concluded that there was an exchange of species between both regions on more than one occasion during the Tertiary and Quaternary periods, and that there had been a limited exchange between the Nearctic and Neotropical region. From this biogeographical viewpoint, it is valuable to study the fauna of the Kamchatka Peninsula and the Kuril Islands adjacent to the Aleutian Islands of the Nearctic region.

The fauna of the family Fanniidae of the Kamchatka Peninsula and the North Kuril Islands has not been sufficiently studied. Previously only four species belonging to the genus *Fannia, F. canicularis, F. manicata, F. carbonaria* and *F. subpellucens,* were known from the Kamchatka Peninsula of Russia (Ringdahl, 1930), and there has been no record from the North Kuril Islands.

The Natural History Museum and Institute, Chiba, carried out the Biological Expedition to the Kamchatka Peninsula and the North Kuril Islands in 1996 and 1997. It was a part of the project entitled "The Origin and Biogeography of the Northeast Asian Biota", in co-operation with the Institute of Biology and Pedology and the Institute of Marine Biology of the Far Eastern Branch of the Russian Academy of Sciences, Vladivostock. In this paper, a list of the fanniid flies is presented based on the material collected during this expedition.

The specimens studied were collected by sweeping with an entomological net in grassland, marsh and shrub around rivers and by light trap with a mercury lamp (160 W). They were deposited in the Natural History Museum and Institute, Chiba (CBM-ZI). Morphological abbreviations used in this paper are listed below. *Acr*: acrostichal setae, *ad*: antero-dorsal, *av*: antero-ventral, *d*: dorsal, *dc*: dorsocentral setae, *p*: posterior, *pd*: postero-dorsal, *pra*: prealar seta(e), *prest acr*: presutural acrostichal setae, *post acr*: postsutural acrostichal setae, *pv*: postero-ventral, *v*: ventral.

List of Collected Species

Genus *Fannia* Robineau-Desvoidy

1 *Fannia aethiops* Malloch

Fannia aethiops Malloch, 1913: 628.

Description. Male. Head. Upper postocular setulae uniserial. Frons arched, at narrowest point as wide as ocellar triangle. Frontal setae 8. Ground colour of parafacialia, parafrontalia and frontal vitta black. Parafrontalia and parafacialia silvery pollinose. Frontal vitta linear, but distinct throughout. Parafacialia bare. Palpi weakly spatulate laterally. Prementum glossy, but sclerotized moderately.

Thorax. Ground colour black, brownish dusted very thinly; on humeral callus, notopleuron and postalar callus brownish-grey dusted; with brownish obscure vittae along *dc* and *acr* rows. *Acr* triserial, but median row incomplete. *Pra* 2–3.

Wings. Wing membrane tinged with brown; veins brown, paler basad. Squamae pale brown, lower one lobated. Halteres brownish yellow.

Abdomen. Heavily bluish-grey pollinose. With a narrow trapezoid mark on tergites 1 +2, 3 and 4, and a median stripe on tergite 5.

Legs. Black, but fore and mid knees somewhat pale. Mid femur with 3 long and close-set *av* setae sub-basally, then 6 long and wide-spaced *av* setae, followed by 3 short close-set setae and 7–8 setae in biserial rows, then short break and a few preapical setulae; with short basal *pv* setae. Mid tibia slightly flattened on basal third, with a weak *v* swelling on apical half, widest depth twice as deep as basal diameter, and with weak *pv* ridge premedially; with a *v* mat of erect hairs on the swelling, of which length is two-thirds as long as the tibial depth, and with sparse and short *v* hairs on basal half; with 1 *ad* and 1 *pd* seta. Mid metatarsus with weak *v* crest. Hind coxa without hairs on inner *p* margin. Hind femur with 1 well-developed preapical *av* seta: with 2 well-developed preapical *pv* setae. Hind tibia with 1 *av* and 1 *ad* seta.

Hypopygium. Cercal plate elongated, narrow at base, then broadened medially, narrowed apically; concave on apical half. Bacilliform process slender, with a small lobe at base; the tip pointed. Surstylus long, broadened basally, weakly curved ventrad. Ninth sternite strongly sclerotized, with strong lateral hooked processes which bear 2 or 3 small spines at base, and with median processes.

Material examined. **North Kuril Islands:** 1 male, Lake Bol'shoye, Shumshu Island, 21. VII. 1997, A. Saito leg., CBM-ZI-82383.

Type locality. White Mts., New Hampshire (USA).

Distribution. Nearctic Region; northern Europe; Asia (China; North Kuril Islands: new record).

Remarks. F. aethiops is a Holarctic species, and has been found in Europe only in northern Sweden, North America (mainly Canada and northern part of U.S.A.) and China. This species is new to Shumshu Island in the North Kuril Islands. The specimen from Shumshu Island differs to some extent from the European and North American series. The latter series have hind femur with 3–6 *pv* setae (Hennig, 1955–1964; Chillcott, 1961), although their hypopygium is the same. Adults are attracted to human excrement, and males however between the upper branches of birch trees (Rozkošný *et al.*, 1997).

2 *Fannia genualis* (Stein)

Homalomyia genualis Stein, 1895: 126.

Description. Female. Head. Upper postocular setulae uniserial. Frons at vertex equal to one-third head width. Parafrontalia, parafacialia and frontal vitta greyish pollinose. Lower orbital seta at middle of frontoorbital plate. Parafrontalia with uniserial setulae outside frontal setae.

Thorax. Ground colour black, thickly greyish pollinose. *Pra* completely absent. *Acr* biserial throughout.

Wings. Wing membrane clear. Veins pale brown, paler basad. Squamae pale yellow. Halteres yellow.

Abdomen. Ground colour black.

Legs. Black, but all knees reddish yellow. Fore tibia with 1 short *av* and 1 *pv* seta. Mid tibia with 1 *av*, 1 *pv* and 2 *pd* setae. Hind coxa haired on inner *p* margin. Hind tibia with 1 *ad* and 1 *av* seta.

Body length. 4.3 mm.

Material examined. **Kamchatka Peninsula:** 1 female, Tikhayia River, about 300 km from Petropavlovsk-Kamchatskiy, 9. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82553.

Type localities. Genthin, Halle a.S. and Berlin (Germany).

Distribution. Europe; Asia (China, Kamchatka Peninsula: new record); Nearctic region.

Remarks. This species has a Holarctic distribution, ranging from northern and central Europe to North America. Males have been captured by using light traps (Rozkošný *et al.*, 1997).

3 *Fannia japonica japonica* Nishida

Fannia japonica Nishida, 1974: 121.

Description. Male. Head. Upper postocular setae biserial. Ground colour of parafrontalia, parafacialia and frontal vitta black. Parafacialia silvery pollinose. Parafrontalia thinly silvery pollinos, but not glossy; narrow. Parafrontal setae 8–9. Prementum glossy, swollen. Palpi shorter than prementum, but longer than half length of prementum; weakly spatulate at apex, with a few long hairs at apex.

Thorax. *Pra* 1, strong. *Acr* biserial throughout.

Wings. Wing membrane faintly smoky. Veins brown. Squamae brown, lower one lobate. Halteres brown.

Abdomen. Ground colour black. With a triangular marking on each tergite.

Legs. Black, including knees. Mid tibia with weak *v* swelling on apical half, widest depth twice as deep as basal diameter, with a *v* mat of sparse hairs on the swelling, the hairs as long as greatest diameter of tibia; with 2 *ad* and 2 *pd* setae. Hind tibia with 2 *av* and 1 *ad* seta. Hind coxa haired on inner *p* margin.

Hypopygium. Cercal plate rounded, with a median button and two slender sublateral hooks. Bacilliform process simple, short and slender. Surstylus expanded medially.

Female. Head. Frons broad, distance between eye margins wider than one-third of head width. Ground colour of parafrontalia, parafacialia and frontal vitta black. Parafrontalia at widest point apparently wider than frontal vitta. Parafrontalia thinly greyish pollinose.

Thorax. As in male.

Wings. Wing membrane clear. Veins pale brown. Squamae pale yellow. Halteres brownish yellow.

Abdomen. Ground colour black, subshining.

Legs. Entirely black. Mid tibia with 2 *ad* and 2 *pd* setae.

Body length. Male, 4.2 mm. Female, 4.1 mm.

Material examined. **Kamchatka Peninsula:** 1 female, 15 km south of Paratunka, 3. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82384.

North Kuril Islands: 1 male, Matrosskaya River near Severo-Kurilsk, Paramushir Island, 14. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82385.

Type locality. Mt. Shirouma, Nagano (Japan).

Distribution. Asia: Japan, Kamchatka Peninsula (new record), North Kuril Islands (new record).

Remarks. *F. japonica japonica* is found throughout the Japanese Islands, and the subspecies, *F. japonica amamiensis* has been found on Amami Island in the Oriental region. These subspecies are hardly distinguishable by external characters but only by the male hypopygium.

On the other hand the specimens from the North Kuril Islands and the Kamchatka Peninsula slightly differ from Japanese specimens: the body colour of the former are darker than the latter, and the latter have pale knees. But these differences are very small, and the hypopygium is not at all different.

In Japan, this species occurs in mountain areas in summer and on the plains in late autumn and early spring.

4 *Fannia mollissima* (Haliday)

Coelomyia mollissima Haliday *in* Westwood, 1840: 143 (footnote).

Description. Male. Head. Frontal setae 8–12, with many fine and long interstitials. Upper orbital seta reclinate. Parafrontalia greyish brown pollinose, narrow. Parafacialia bare, wide, greyish brown pollinose. Fron-

tal vitta wider than parafrontalia. Upper postocular setae triserial. The plate of clypeus and facial ridge raised forwards. Oral margin distinctly projecting beyond vibrissal angle. Vibrissal angle well in front of anterior level of frons. Prementum very long and slender, 5 times as long as wide, pollinose, not glossy.

Thorax. Ground colour black, brownish pollinose, not vittate. *Acr* biserial throughout. *Pra* 1-2, differentiated.

Wings. Wing membrane tinged with brown. Veins brown, but paler basad. Squamae pale brown, lower one linear. Halteres pale brown.

Abdomen. Black, strongly spatulate. Brownish grey pollinose, with a triangular mark on each tergite. Lateral margin of 5th tergite strongly rolled inwards; with many long and strong setae, the setae crossed over *v* surface of abdomen.

Legs. Black, including knees. Fore tibia with an indistinct *ad* seta. Mid tibia modified on *v* surface, *av* surface excised at basal quater and just beyond the middle, and then *v* surface swollen on apical third; with a narrow glossy zone on basal half, changing from *av* surface to *v* surface toward apex; with a *v* mat of long hairs on the swelling; with 1 *ad* and 1 *pd* seta. Hind coxa bare on inner *p* margin. Hind tibia with 1 *ad* and 1 *av* seta.

Female. Head. Frontal vitta on lower third and parafacialia along ptilinal suture reddish brown, but otherwise black. Prementum slender, very long, greyish pollinose. Frons wide, distance between eye margins as wide as one-third of head width.

Thorax. Thickly brownish grey pollinose. Not vittate.

Wings. Membrane tinged with brown. Veins brown, but paler basad. Squamae and halteres pale brownish yellow.

Abdomen. Ground colour black. Thinly brownish grey pollinose.

Legs. Entirely black. Fore tibia with 1 small *ad* seta. Mid tibia with 1 *ad* and 1 *pd* seta. Hind tibia with 1 *ad* and 1 *pd* seta.

Body length. Male, 5.4–6.2 mm. Female, 4.3 mm.

Material examined. **North Kurile Islands:** 1 male, 3–8 km south of Severo-Kurilsk, Paramushir Island, 13. VII. 1997, A. Saito leg., CBM-ZI-82386; 2 males, 1 female, Lake Bol'shoye, Shumshu Island, 22. VII. 1997, R. B. Kuranishi leg, CBM-ZI-82387-82389.

Type locality. Not given.

Distribution. Europe; Asia (Russia, Mongolia, China, Japan, North Kuril Islands (new record)); Nearctic region.

Remarks. *F. mollissima* has a Holarctic distribution. In Japan, this species is found at high mountains in summer. Specimens from the North Kuril Islands are darker than Japanese specimens.

5 *Fannia norvegica* Ringdahl

Fannia norvegica Ringdahl, 1934: 98.

Description. Male. Head. Eyes bare. Frontal setae 10, with a few short interstitials. Ground colour of parafrontalia, parafacialia and frontal vitta black. Parafrontalia silvery grey pollinose. Parafacialia wide, silvery pollinose, bare. Frontal vitta distinct throughout. Upper postocular setae uniserial, but with 2 isolated setae immediately below. Prementum greyish pollinose. Arista entirely black.

Thorax. Ground colour black, glossy. Not vittate. *Pra* 2, anterior one very long. *Prest acr* biserial; *post acr* triserial, the setae of median row weak.

Wings. Membrane of wing smoky. Veins brown, but near base brownish yellow. Squamae brownish yellow, lower one lobate. Halteres brownish yellow.

Abdomen. Ground colour black, subshining, thinly pollinose. With an obscure triangular mark on each tergite.

Legs. Black, including knees. Mid tibia gradually thickened apicad, with a *v* mat of short hairs on apical half; with 2 *ad* and 2 *pd* setae. Hind femur with a complete row of long *pv* setae. Hind coxa without hairs on inner *p* margin. Hind tibia with 3 or 4 *ad* and 2 *av* setae.

Hypopygium. Cercal plate broad basally and constricted preapically, with a stalked apical button, with a pair of inward-curved process behind the button. Bacilliform process slender and strongly curved inward. Surstylus sinuate, with a preapical thumb and a preapical *v* process.

Female. Head. Frons at vertex one-third as wide as head width. Ground colour of parafrontalia, parafacialia and frontal vitta black. Parafrontalia glossy, without any pollen. Lower orbital seta situated nearer to inner margin of parafrontal plate. Parafacialia silvery grey pollinose, bare. Arista entirely black.

Thorax. Black, very thinly pollinose, subshining. *Pra* 1, strong. *Prest acr* biserial, *post acr* triserial.

Wings. Membrane of wings light brown. Veins pale brown. Squamae pale yellow, lower one lobate. Halteres brownish yellow.

Abdomen. Black, very thinly pollinose, subshining.

Legs. Black, including knees. Mid tibia with 1 *av*, 2 *ad* and 2 *pd* setae. Hind coxa bare on inner *p* margin. Hind tibia with 2 *av* and 2 or 3 *ad* setae.

Body length. Male, 6.2 mm. Female, 4.3 mm.

Material examined. **Kamchatka Peninsula:** 1 female, 15 km south of Paratunka, 3. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82390.

North Kurile Islands: 1 male, Shelekhovo-Shimoyur River, Paramushir Island, 17. VII. 1997, A. Saito leg., CBM-ZI-82391.

Type locality. Tromsø (Norway).

Distribution. Europe; Asia (Kamchatka Peninsula: new record; North Kuril Islands: new record).

Remarks. *F. norvegica* has a Palaearctic distribution, and is only known with certainty from Great Britain and Norway.

6 *Fannia peneserena* Nishida

Fannia peneserena Nishida, 1972: 25.

Description. Male. Head. Eyes with sparse and short hairs. Frons hardly arched. Ground colour of parafrontalia, parafacialia and frontal vitta black. Upper half of parafrontalia brownish grey pollinose, and lower half silvery grey pollinose. Parafacialia silvery grey pollinose, bare. Frontal setae 8 or 9, with a few fine and short interstitials. Frontal vitta linear, but distinct throughout. Upper postocular setae uniserial, but with 1 or 2 isolated setae immediately below. Prementum short, pollinose.

Thorax. Ground colour black, brownish pollinose. Not vittate. *Pra* 2. *Acr* biserial throughout.

Wings. Membrane of wing smoky. Veins brown. Squamae smoky, lower one linear. Halteres brown.

Abdomen. Ground colour black, greyish brown pollinose. With a triangular mark on each tergite.

Legs. Black, including knees. Mid tibia becoming thicker apicad, widest depth as great as basal diameter; with a *v* mat of erect hairs, the hairs as long as tibial depth; with 1 *ad* and 1 *pd* seta. Hind coxa bare on inner *p* margin. Hind femur with fine and long *pv* and *v* setulae on basal three-quarters. Hind tibia with 1 *av* and 1 *ad* seta.

Hypopygium. Cercal plate strongly broadened apically, apex truncated. Surstylus broad at base, curved inward medially, constricted on apical third. Bacilliform process distinctly spiralled.

Body length. 4.2 mm.

Material examined. **North Kuril Islands:** 1 male, Shelekhova, Paramushir Island, 16. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82392.

Type locality. Mt. Hakusan, Ishikawa (Japan).

Distribution. Asia (Japan; North Kuril Islands: new record).

Remarks. *F. peneserena* occurs in the Japanese Islands. The specimen from Paramushir Island scarcely differs from Japanese specimens.

7 *Fannia serena* (Fallén)

Musca serena Fallén, 1825: 76.

Description. Male. Head. Eyes bare. Ground colour of parafrontalia, parafacialia and frontal vitta black. Upper half of parafrontalia brownish grey pollinose, and lower half silvery grey pollinose. Frontal setae 7 or 8, with a few fine and short interstitials. Parafrontalia contiguous on *d* half. Upper postocular setae uniserial.

Thorax. Ground colour black. Thinly brownish pollinose. Not vittate. *Pra* 2. *Acr* biserial throughout.

Wings. Wing membrane smoky. Veins brown. Squamae smoky, lower one linear. Halteres brown.

Abdomen. Ground colour black, brownish

pollinose thinly. With a triangular mark on each tergite.

Legs. Black, including knees. Mid tibia becoming thicker apicad, widest depth twice as deep as basal diameter; with a *v* mat of erect hairs, the hairs as long as tibial depth; with 1 *ad* and 1 *pd* seta. Hind coxa without hairs on inner *p* margin. Hind femur with short and sparse *pv* and *v* setulae on basal third. Hind tibia with 1 *av* and 1 *ad* seta.

Body length. 4.0 mm.

Material examined. **Kamchatka Peninsula:** 1 male, Bystraya River (Riverside), 11 km north of Malka, 5. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82393.

Type locality. Scania (Sweden).

Distribution. Europe; Asia (Turkey, Russia, China, Japan, Kamchatka Peninsula: new record); Nearctic region.

Remarks. F. serena has a Holarctic distribution, and occurs commonly throughout the Japanese Islands. Japanese specimens differ from the specimen from the Kamchatka Peninsula by the following characters: fore knees slightly pale; membrane of wing yellowish brown, veins pale brown; squamae and halteres exhibit colour variation from pale brown to yellowish brown. But, these differences are not enough to separate them as subspecies.

8 *Fannia sociella* (Zetterstedt)

Aricia sociella Zetterstedt, 1845: 1564.

Description. Male. Head. Frontal setae 8 or 9, with a few short interstitials. Upper postocular setae uniserial.

Thorax. Black, not vittate. Brownish grey pollinose. *Acr* biserial throughout. *Pra* 2–3.

Wings. Membrane smoky. Veins brown, but paler near base. Squamae pale yellow, lower one linear. Halteres brownish yellow.

Abdomen. Black, greyish brown pollinose. With a narrow median vitta on each terigite.

Legs. Predominantly black, knees slightly pale. Mid femur with 3 spine-like *av* setae in middle. Mid tibia weakly modified on *v* surface, with weak *v* ridge in median third, and weak *av* excision just beyond middle, then gradually thickened apicad; *v* surface on basal two-third glossy; with 2 *ad* and 1 *pd* seta. Hind coxa without hairs on *p* inner margin. Hind tibia with only 1 *d* seta (without a preapical *d* seta), 1 *av* and 2 *ad* setae.

Body length. 4.8 mm.

Material examined. **North Kuril Islands:** 1 male, Matrosskaya River near Severo-Kurilsk, Paramushir Island, 14. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82404.

Type locality. "in Dania" (Denmark).

Distribution. Europe, Azores; Asia (Russia; China; Japan; North Kuril Islands: new record); Nearctic region.

Remarks. F. sociella has a Holarctic distribution, and occurs at mountain areas in Japan. Japanese specimens differ from the specimen from Paramushir Island by the following characteristics: all knees paler; sometimes ground colour of abdomen slightly paler; and membrane of wing yellowish brown.

9 *Fannia spathiophora* Malloch

Fannia spathiophora Malloch, 1918: 294.

Description. Female. Head. Eyes bare. Frons broad, one-third as wide as head width. Parafrontalia entirely pollinose. Parafacialia bare. Upper postocular setae uniserial. Prementum large, shining black, twice as long as broad. Palpi large, strongly dilated.

Thorax. Ground colour black, brownish grey pollinose; not vittate. *Pra* 2. *Prest acr* biserial; *post acr* triserial, setae of median row sparse.

Wings. Membrane clear. Veins brown, paler basad. Squamae pale yellow; lower one rounded, but narrower than upper one. Halteres pale yellow.

Abdomen. Black, not vittate. Thinly greyish dusted.

Legs. Black, but fore knees dark reddish brown. Mid tibia with 1 *ad,* 1 *pd* and no *av* setae. Hind coxa without hairs on inner *p* margin. Hind tibia with 1 *av* and 1 *ad* seta.

Ovipositor. 6th sternite as wide as long, with several fine setulae along *p* margin, anterior margin slightly rounded. 6th and 7th spiracles both open on the 6th tergite. 7th sternite as 6th sternite. 8th sternite paired, elongated, with some short and fine setulae on *p* third. Subanal plate apparently longer than wide, setulose evenly on disc. Spermathecae 2 in number, pear-shaped, corrugated

weakly on apical one-third, with a dimple at apex, duct-base strongly curved.

Body length. 3.1–3.6 mm.

Material examined. **Kamchatka Peninsula:** 3 females, Poperechanaya River, Bystralya River basin, 17 km from main road, 29. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82394-82396; 7 females, 30 km north of Ganaly, 30. VII. 1997, A. Saito leg., CBM-ZI-82397-82403.

Type locality. Gold Rock, Rainy River district, Ontario (Canada).

Distribution. Europe; Asia (Russia; China; Japan; Kamchatka Peninsula: new record); Nearctic region.

Remarks. *F. spathiophora* has a Holarctic distribution. The specimens do not differ from Japanese specimens.

10 *Fannia subpellucens* (Zetterstedt)

Aricia subpellucens Zetterstedt, 1845: 1561.

Description. Male. Head. Frons wide, weakly arched. Frontal setae 7–10, with several fine and short interstitials. Upper orbital seta slightly shorter, straight, but sometimes reclinate. Parafrontalia and parafacialia silvery grey pollinose. Upper postocular setae triserial. Oral margin not projecting. Epistoma not protruding beyond the vibrissal angle. Proboscis enlarged, prementum broad and short.

Thorax. Ground colour black; brownish grey pollinose on dorsum, humeral callus and notopleuron grey pollinose; with obscure brown vittae along *acr* and *dc* rows. *Pra* 2.

Wings. Wing membrane tinged with brown. Veins brown, but paler at base. Squamae pale yellow, lower one linear. Halteres deep yellow.

Abdomen. Lateral areas of 2nd to 4th tergites pellucid yellow normally, but sometimes only 2nd and 3rd tergites yellow, or only 2nd tergite slightly pale. Median vitta indistinct except on those tergites with yellow spots. Abdomen spatulate, broadest just beyond middle. Lateral margins of 5th tergite elongated and rolled inwards on *v* surface of abdomen; with fine setulae on the margins.

Legs. Black, but sometimes fore knees slightly pale. Mid femur thickened on *v* surface on basal three-quarters, then abruptly constricted; with 2 strong spine-like *av* setae at basal quarter, then with a row of 4–6 strong setae, followed by a clump of short setae, of which tips are bent, and bare, and then a preapical comb. Mid tibia strongly modified, flattened sub-basally, and with a small *v* swelling at a basal quarter, then abruptly thickened again and continued to apex; *v* surface on basal half glossy; with 1 *av* and 1 *pd* seta. Hind coxa without hairs on inner *p* margin. Hind tibia with 1 *ad* and 1–2 *av* setae.

Female. Head. Frons at vertex wider than an eye. Parafacialia bare. Upper postocular setae triserial. Parafrontalia grey pollinose. Oral margin not projecting. Epistoma not protruding beyond vibrissal angle. Proboscis developed; prementum pollinose, short and broad.

Thorax. Ground colour black; brownish grey pollinose on dorsum, grey pollinose on humerus callus and notopleuron. With obscure greyish brown vittae along *dc* and *acr* rows. *Pra* 2.

Wings. Membrane of wing tinged with yellowish brown, and more yellowish basad. Veins brown, but near base yellowish brown. Squamae yellow; lower one linear. Halteres deep yellow.

Abdomen. With an irregular reddish brown mark on segment 1+2, but sometimes predominantly black.

Legs. Black, but fore knees reddish brown. Mid tibia with 1 *av* and 1 *ad* seta. Hind coxa bare on inner *p* margin. Hind tibia with 1–2 *av* and 1 *ad* seta.

Body length. Male, 5.9–6.6 mm. Female, 4.7–5.5 mm.

Material examined. **Kamchatka Peninsula:** 1 male, 5 km west of Mt. Vilyuchinsky, 3. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82405; 2 males, 1 female, Bystraya River (Riverside), 11 km north of Malka, 5. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82406-82408; 1 female, Basin of the Bystraya River, 10 km south of Anavgay, 9. VII. 1996, R. B. Kuranishi leg., CBM-ZI-82409; 1 female, 5 km south of Paratunka, 7. VII. 1997, A. Saito leg., CBM-ZI-82410.

North Kuril Islands: 1 male, 2 females, Matrosskaya River near Severo-Kurilsk, Paramushir Island, 11. VII. 1997, R. B. Kuranishi

leg., CBM-ZI-82411-82413; 1 male, 3–8 km south of Severo-Kurilsk, Paramushir Island, 13. VII. 1997, A. Saitoleg., CBM-ZI-82414; 3 males, 2 females, Matrosskaya River near Severo-Kurilsk, Paramushir Island, 14. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82415-82419; 2 males, 35 females, Shelekhovo-Shimoyur River, Paramushir Island, 17. VII. 1997, A. Saito leg.,CBM-ZI-82420-82456; 2 males, 7 females, Lake Bol'shoye, Shumshu Island, 21. VII. 1997, A. Saito leg., CBM-ZI-82457-82466; 60 female, 4 intersex, Lake Bol'shoye, Shumshu Island, 22. VII. 1997, R. B. Kuranishi leg., CBM-ZI-82467-82529; 1 male, 5 females, 4 km north of Severo-Kurilsk, Paramushir Island, 24. VII. 1997, A. Saito leg., CBM-ZI-82530-82535.

Type locality "Scandinavia boreali" (Northern Scandinavia).

Distribution. Europe; Asia (Russia; Japan; Kamchatka Peninsula; North Kuril Islands: new record); Nearctic region.

Remarks. F. subpellucens has a Holarctic distribution, and also occurs in Japan. This species was reported from the Kamchatka Peninsula by Ringdahl (1930). The specimens from the Kamchatka Peninsula and the North Kuril Islands are darker than Japanese specimens. This difference is more prominent especially in the females. The females of Japanese specimens have two types of abdomen. The first type is as follows: tergites 1 +2, 3 and 4 are largely yellow, with bluish *p* margins; occasionary with an incomplete median black vitta on each tergite. The second type is as follows: tergite 1+2 is reddish yellow, with bluish black *p* margin; the other tergites are entirely black. On the other hand, the specimens from Kamchatka and Kurile Island have predominantly black abdomen.

Four intersexual specimens were found in this material. Upper and lower orbital setae situated outside of parafrontal setae, unmodified mid legs and darker abdomen are the characteristics of female, but otherwise, especially the structure of hypopygium, shows that they are male. Intersexual specimens are often encountered in the genus *Fannia.*

Discussion

Four species, *F. canicularis, F. carbonaria, F. manicata,* and *F. subpellucens,* were previously recorded from the Kamchatka Peninsula (Ringdahl, 1930). Recently five species, *F. genualis, F. japonica japonica, F. norvegica, F. serena* and *F. spathiophora, have been* added from the same Peninsula. Three species, *F. aethiops, F. mollissima* and *F. subpellucens, have been* recorded for the first time from Shumshu Island in the North Kuril Islands and six species, *F. japonica japonica, F. mollissima, F. norvegica, F. peneserena, F. sociella* and *F. subpellucens,* are new to Paramushir Island. In brief, eight species from the Kamchatka Peninsula and seven species from the North Kuril Islands have been recognized, though the previously recorded species, *F. canicularis, F. carbonaria* and *F. manicata,* were not found in this collection.

F. canicularis is distributed world wide. *F. aethiops, F. carbonaria, F. genualis, F. manicata, F. mollissima, F. serena, F. sociella, F. spathiophora* and *F. subpellucens* range through the Holarctic region.

F. norvegica, which has been regarded as a northern European species, occurs in Eurasia. Ringdahl (1930) recorded *F. carbonaria* from Kamchatka, though according to the personal letter from Dr. A. Pont, Hope Entomological Collections, University Museum, Oxford, Ringdahl's *F. carbonaria* recorded from Kamchatka in 1930 is probably a misidentification and may have been identified as *F. norvegica* Ringdahl.

F. japonica japonica and *F. peneserena* occur on Paramushir Island and the Japanese Island. *F. japonica amamiensis,* another subspecies of *F. japonica,* occurs on Amami Island of the Oriental region.

The modern investigation of the Kamchatka Peninsula and the North Kuril Island is now beginning, and knowledge of the distribution of the fauna in Asia is still incomplete. If we collect fanniid flies not only by net but also by light trap or Malaise trap, we shall be able to recognize further important or rare species. Although present data are still not sufficient, it is suggested that Holarctic species will account for a high proportion of the species in northeast Asia because of its prox-

imity to North America.

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1996–1997年に採集されたカムチャツカ半島と北千島のヒメイエバエ科昆虫

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1996年と1997年に，カムチャツカ半島と北千島で千葉県立中央博物館とロシア科学アカデミーの生物学共同調査が行われ，ライトトラップやスイーピング法でヒメイエバエ科昆虫が採集された．ヒメイエバエ科はイエバエ科やハナバエ科に近縁の分類群で，ヒメイエバエ属(Genus *Fannia*)，ニセヒメイエバエ属(Genus *Euryomma*)，ウスハラバエ属(Genus *Piezura*)およびゴウシュウヒメイエバエ属(Genus *Australofannia*)の4属が含まれ，全世界から合計約260種が記載されている．このうち240種あまりはヒメイエバエ属である．ヒメイエバエ科は旧北区(亜区)からは104種，新北区(亜区)からは101種，新熱帯区からは59種，エチオピア区からは31種，オーストラリア・大洋区からは11種，東洋区からは30種が報告されている．ヒメイエバエ科の起源についてはほとんどわかっておらず，新生代第三紀のある時期といわれている．ヒメイエバエ属は，その種類の多さと多様性の豊かさから旧北区のどこかに起源があると考えられている．旧北区に生息する種類のうち，新北区と共通の種類は約30%を占める．さらに25%が近縁種である．このように相互に類縁性が大変深い．これはベーリング陸橋を通過して両区の間で移動があった結果と推定されている．この観点からも，新北区に近いカムチャッカ半島や北千島諸島の昆虫相調査は大変興味深い．北半球のヒメイエバエ属昆虫は森林性の種類が多く，温帯から亜寒帯の湿潤な気候帯に生息する種類が圧倒的に多い．よく晴れた日や，明るく開けた場所を嫌う傾向が強い．ただし，寒冷な気候下で生息するものには，体温を上げるために多数が木の幹や葉，石の上に静止して，日光浴をするものがある．

カムチャッカ半島におけるヒメイエバエ科の調査は，過去にRingdahl (1930)の記録があるだけである．これによるとヒメイエバエ(*Fannia canicularis* (Linnaeus))，クロツヤヒメイエバエ(*F. carbonaria* (Meigen))，フリソデヒメイエバエ(*F. manicata* (Meigen))，コシアキハラビロヒメイエバエ(*F. subpellucens* (Zetterstedt))が報告されている．しかし，北千島の調査記録は過去にはない．

今回の調査では，カムチャッカ半島からケナシヒメ

イエバエ (*Fannia genualis* (Stein)), ヤマトヒメイエバエ (*F. japonica japonica* Nishida), ノルウェーヒメイエバエ (*F. norvegica* Ringdahl), チビヒメイエバエ (*F. serena* Fallén), カギテヒメイエバエ (*F. spathiophora* Malloch), コシアキハラビロヒメイエバエ (*F. subpellucens* (Zetterstet)) の6種が, パラムシル島からはヤマトヒメイエバエ, ハラビロヒメイエバエ (*F. mollissima* (Haliday)), ノルウェーヒメイエバエ, クロチビヒメイエバエ (*F. peneserena* Nishida), ホソヒメイエバエ (*F. sociella* (Zetterstedt)), コシアキハラビロヒメイエバエの6種が, シュムシュ島からはエチオピアヒメイエバエ (*F. aethiops* Malloch), ハラビロヒメイエバエ, コシアキハラビロヒメイエバエの3種が採集された. カムチャッカ半島からのコシアキハラビロヒメイエバエ以外はすべて未記録種である.

なお, 著者に宛てた Pont 氏 (Entomological Collections, University Museum, Oxford, U. K.) の手紙によると, Ringdahl が報告したクロツヤヒメイエバエ はノルウェーヒメイエバエ の誤同定である.

ノルウェーヒメイエバエはこれまではノルウェーとイギリスからの記録しかなく, ヨーロッパ特産種と考えられていた. 寒冷な気候を好む北方系の種類である.

ヤマトヒメイエバエは本州では晩秋から早春にかけては低地や丘陵帯で, 夏期には亜高山帯で発生する. これに近縁の種類はアメリカ西部海岸と東北部にそれぞれ1種ずつが分布している. ヤマトヒメイエバエは日本列島に広く分布するが, 中国や朝鮮半島からは記録がない. ケナシヒメイエバエ, エチオピアヒメイエバエ, ハラビロヒメイエバエ, コシアキハラビロヒメイエバエ, ホソヒメイエバエ, チビヒメイエバエは亜高山帯の昆虫である. しかし, エチオピアヒメイエバエは北米やヨーロッパのツンドラにも生息する.

また, 今回採集された10種と, 既知種 (クロツヤヒメイエバエは除く) の2種を加えた12種のうち, 世界共通種は衛生害虫であるヒメイエバエの1種, 全北区のものが7種, 旧北区のものが3種, 全北区と東洋区に分布するものが1種である. エチオピアヒメイエバエ, ケナシヒメイエバエ, ノルウェーヒメイエバエの3種はいずれも日本よりも冷涼な気候帯に住む種類である. これらを除いた9種が日本との共通種である.

この調査では10種が採集されているが, ヨーロッパのヒメイエバエ相から類推すると, もっと多くの種類が生息しているだろう. この調査結果の範囲で見ると全北区の種類の比率が高い. これは新北区に近い地域の特性ではないかと思われる.