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Anthomyiid flies from Kamchatka and the Kuril Islands (Diptera: Anthomyiidae)

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Abstract Specimens of anthomyiid flies recently collected in Kamchatka and the Kuril Islands were examined: 17 species were recognized from Kamchatka and 30 species from the Kuril Islands. When these are enumerated together with species already recorded in the literature, totals of 54 species (including 9 newly-added) are known from Kamchatka and 44 species (including 23 newly-added) from the Kuril Islands. Their distributional patterns are briefly discussed. *Acklandia koreacola* Suh and Kwon, 1985, and *Phorbia pegohylemyioides* Yudin, 1979, are synonymized with *Acklandia aculeata* (Ringdahl, 1930) and *Acklandia subgrisea* (Ringdahl, 1930) respectively. A check list of the Anthomyiidae from Kamchatka and the Kuril Islands is added.

Key words: Anthomyiidae, *Acklandia, Phorbia,* Kamchatka, Kuril Islands, biogeography.

The Anthomyiidae are flies widespread in the world, and abundant especially in temperate to arctic regions in the Northern Hemisphere. At present are known about 900 and 650 species in the Palaearctic and Nearctic regions respectively. Of them more than 200 species are Holarctic in their distribution. The anthomyiid fauna has rather well been investigated in Alaska, and most of the Holarctic species have also been recorded there. On the other hand, we have little knowledge on the counterpart in Eurasia, namely, West Beringia. The faunal investigations in the area and surroundings are keenly needed in order to evaluate the role of the Bering Strait played in the biogeography.

In the present work we have examined some anthomyiid flies collected in Kamchatka and the Kuril Islands mainly by the junior authors (R. B. Kuranishi during the Biological Expedition of the Natural History Museum and Institute, Chiba to the Kamchatka Peninsula and the North Kuril Islands in 1996 and 1997, and M. Ôhara as part of the International Kuril Islands Project (IKIP) in 1995–1996). As a result 40 species are recognized, of which 17 were collected in Kamchatka and 30 in the Kuril Islands. So far as we are aware, 45 species of the family were previously recorded from Kamchatka, including a few species from the Commander Islands, and 21 species from the Kuril Islands. In total 54 species are now known in Kamchatka and 44 in the Kuril Islands. These are enumerated in the following text. The anthomyiid faunas of the areas are briefly discussed. A check list of species is also added.

Records of anthomyiid flies occurring in Kamchatka and the Kuril Islands

Only for species which were previously recorded from Kamchatka or the Kuril Islands, references including those records are given. Specimens accompanied with the abbreviation RBK were collected by R. B. Kuranishi, and those with a code such as "PA 96MO-009" by M. Ôhara.

1. *Acklandia aculeata* (Ringdahl, 1930)

Hylemyia (*Euryparia*) *aculeata* Ringdahl, 1930: 9 (Kamchatka, type locality).
Acklandia koreacola Suh and Kwon, 1985: 177 (Korea, type locality). **Syn. nov.**

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Northeastern China; Korea.

Remarks. No significant differences from *A. aculeata* are indicated in the original description of *A. koreacola.* The two taxa are here treated as conspecific.

2. *Acklandia subgrisea* (Ringdahl, 1930)

Phorbia subgrisea Ringdahl, 1930: 8 (Kamchatka, type locality).
Phorbia pegohylemyioides Yudin, 1979: 209 (Siberia, type locality). **Syn. nov.**

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Siberia (Irkutskaya Oblast); Northeastern China; Japan.

Remarks. In the original description of *P. pegohylemyioides* based on Siberian specimens we have failed to find any characters significant enough to recognize it as distinct from *A. subgrisea,* and here treat them as conspecific.

3. *Adia cinerella* (Fallén, 1825)

Hylemyia cinerella: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Holarctic and Oriental regions.

4. *Alliopsis silvatica* (Suwa, 1974)

Paraprosalpia silvatica: Suwa, 1981: 11 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Northeastern China.

5. *Alliopsis silvestris* (Fallén, 1824)

Prosalpia silvestris: Ringdahl, 1930: 4 (Kamchatka).

Material examined. **Kuril Islands.** Paramushir Island: Shelekhovo, Shimoyur River, 1♂, 17. vii. 1997 (RBK; CBM-ZI 82740); near Pernatoye Lake, south end of the island, 1♀, 3. viii. 1996 (PA96MO-009); Utesnyi, 1♀, 1. viii. 1996 (PA96MO-001B).

Distribution. Kamchatka Peninsula; Kuril Islands; Sakhalin; Japan; Northeastern China; Siberia (Irkutsk); Europe; North America.

6. *Botanophila angulosa* (Ringdahl, 1930)

Hylemyia angulosa Ringdahl, 1930: 9 (Kamchatka, type locality).
Pegohylemyia angulosa: Suwa, 1981: 11 (Kuril Islands).

Material examined. **Kuril Islands.** Paramushir Island: Shelekhovo, Shimoyur River, 1♂, 17. vii. 1997 (A. Saito leg; CBM-ZI 82741). Matua Island: inland from Dvoynaya Bay, 1♂, 14. viii. 1996 (MA96MO-042B). Rasshua Island: near Malen'kaya Bay, 1♂, 22 [12]. viii. 1995 (RAS95MO-012).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan.

7. *Botanophila appendiculata* (Malloch, 1920)

Material examined. **Kuril Islands.** Kharimkotan Island: Severgina Bay, northern end of Kharimkotan, 3♂, 4. viii. 1996 (KH96MO-023); Severgina Bay, northern end of Kharimkotan, 6♂, 10♀, 8. viii. 1996 (KH96MO-027). Rasshua Island: near Malen'kaya Bay, 4♂, 22 [12]. viii. 1995 (RAS 95 MO-012); around Beloye and Tikhoye Lakes, 2♂, 12. viii. 1995 (RAS95MO-013).

Distribution. Kuril Islands; Japan; North America.

Remarks. This species is widely distributed in North America from Alaska to Quebec, and is expected to occur in Kamchatka. The European *B. biciliaris* (Pandélle, 1900) (=*Pegohylemyia norvegica* Ringdahl, 1952) is very similar to the present species, and the two forms might belong to one and the same species with a Holarctic distribution.

8. *Botanophila betarum* (Lintner, 1883)

Pegohylemyia macra: Suwa, 1981: 12 (Kuril Islands).

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 8♂, 17. vii. 1996 (RBK; CBM-ZI 82742–82749).

Kuril Islands. Urup Island: Otkrytyy Bay,

1♂, 4. viii. 1995 (UR95MO-002).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Western China; Siberia (Irkutsk); Eastern Turkestan; Finland; North America.

9. *Botanophila clavata* (Hennig, 1970)

Material examined. **Kuril Islands.** Onekotan Island: near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 3♂, 1♀, 9. viii. 1996 (ON96MO-030B).

Distribution. Kuril Islands; Central Asia.

Remarks. This species was originally described on the basis of a single male specimen collected at Naryn, Tien Shan (Hennig, 1970: 362), and no record has been added.

10. *Botanophila fugax* (Meigen, 1826)

Hylemyia fugax: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kuril Islands.** Paramushir Island: Shelekhovo, Shimoyur River, 1♂, 17. vii. 1997 (A. Saito leg.; CBM-ZI 82750).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; China; Urals; Europe; North America.

11. *Botanophila hucketti* (Ringdahl, 1935)

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 1♂, 17. vii. 1996 (RBK; CBM-ZI 82751). Basin of Bystraya River, 10 km southeast of Anavgay, 2♂, 9. vii. 1996 (RBK; CBM-ZI 82752–82753).

Distribution. Kamchatka Peninsula; Japan; China; Europe; North America.

12. *Botanophila isikariana* (Suwa, 1974)

Material examined. **Kuril Islands.** Onekotan Island: near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 1♂, 9. viii. 1996 (ON96MO-030B).

Distribution. Kuril Islands; Japan.

Remarks. This is the first record of the species outside Japan. Its occurrence in North Kuril Islands may indicate a wide distribution of the species in northeastern Asia.

13. *Botanophila maculipes* (Zetterstedt, 1845)

Material examined. **Kuril Islands.** Ketoi Island: near mouth of Stochnyy River, 1♂, 19. viii. 1995 (KE95MO-034).

Distribution. Kuril Islands; Japan; Korea; China; Taiwan; Europe.

14. *Botanophila nigrigenis* (Suwa, 1974)

Material examined. **Kuril Islands.** Urup Island: Otkrytyy Bay, 4♂, 5. viii. 1995 (UR95 MO-004).

Distribution. Kuril Islands; Japan; China; Taiwan.

15. *Botanophila profuga* (Stein, 1916)

Material examined. **Kuril Islands.** Paramushir Island: 4 km north of Severo-Kuril'sk, 1♂, 1♀, 24. vii. 1997 (A. Saito leg.; CBM-ZI 82754-82755).

Distribution. Kuril Islands; Japan; China; Europe; North America.

16. *Botanophila rotundivalva* (Ringdahl, 1937)

Material examined. **Kuril Islands.** Onekotan Island: near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 1♂, 9. viii. 1996 (ON96MO-030B).

Distribution. Kuril Islands; Japan; Scandinavia.

17. *Botanophila rubrifrons* (Ringdahl, 1933)

Material examined. **Kuril Islands.** Rasshua Island: near Malen'kaya Bay, 2♂, 22 [12]. viii. 1995 (RAS95MO-012).

Distribution. Kuril Islands; Japan; Northeastern China; Europe.

18. *Botanophila rubrigena* (Schnabl, 1915)

Hylemyia simplex Ringdahl, 1930: 10 (Kamchatka, type locality).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 1♂, 1♀, 21–22. vii. 1997 (RBK; CBM-ZI 82756–82757). Paramushir Island: Matrosskaya River, near Severo-Kuril'sk, 1♂, 14. vii. 1997 (RBK; CBM-ZI 82758).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Siberia (Karskaya, Tobolsk District); Europe; Greenland.

19. *Botanophila spinidens* (Malloch, 1920)

Hylemyia spinidens: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; North America.

20. *Botanophila striolata* (Fallén, 1824)

Hylemyia discreta var. *angustifrons* Ringdahl, 1930: 11 (Kamchatka, type locality).

Pegohylemyia striolata: Suwa, 1981: 12 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Korea; China; Siberia (Urals; Karskaya, Tobolsk District); Europe.

21. *Botanophila tuxeni* (Ringdahl, 1953)

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 3♂, 21–22. vii. 1997 (RBK; CBM-ZI 82759–82761), 2♂, 21. vii. 1997 (A. Saito leg.; CBM-ZI 82762–82763). Paramushir Island: Shelekhovo, Shimoyur River, 1♂, 17. vii. 1997 (A. Saito leg.; CBM-ZI 82764); 4 km north of Severo-Kuril'sk, 1♂, 24. vii. 1997 (A. Saito leg.; CBM-ZI 82765). Onekotan Island: near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 1♂, 9. viii. 1996 (ON96MO-030B).

Distribution. Kuril Islands; Western China; Iceland.

Remarks. This species has recently been recorded from western China (Sinkiang and Tibet, Fan *et al.*, 1988), and this is the first addition to the original record from Iceland. The discovery of the species in the Kuril Islands indicates that it is widely distributed in the Palaearctic region even if not continuously.

22. *Delia brunnescens* (Zetterstedt, 1845)

Delia brunnescens: Suwa, 1981: 5 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Europe.

23. *Delia echinata* Séguy, 1923

Delia echinata: Suwa, 1981: 9 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Holarctic and Oriental regions.

24. *Delia fabricii* (Holmgren, 1872)

Hylemyia fabricii: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 2♂, 17. vii. 1996 (RBK; CBM-ZI 82766–82767).

Kuril Islands. Shumshu Island: Lake Bol'shoye, 1♂, 1♀, 21. vii. 1997 (RBK; CBM-ZI 82768–82769). Kharimkotan Island: Severgina Bay, northern end of Kharimkotan, 1♂, 1♀, 4. viii. 1996 (KH96MO-023).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Novaya Zemlya; Europe; North America; Greenland.

25. *Delia floralis* (Fallén, 1824)

Hylemyia floralis: Ringdahl, 1930: 5 (Kamchatka).

Hylemya floralis: Kuwayama, 1967: 127 (Kuril Islands).

Delia floralis: Suwa, 1981: 9 (Kuril Islands).

Material examined. **Kamchatka Peninsula.** Nagomyi, near Petropavlovsk-Kamchatskiy, 1♂, 10. vii. 1997 (RBK; CBM-ZI 82770).

Distribution. Holarctic region.

26. *Delia florilega* (Zetterstedt, 1845)

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 2♂, 17. vii. 1996 (RBK; CBM-ZI 82771–82772).

Distribution. Kamchatka Peninsula; China; Europe; North America.

27. *Delia jilinensis* Chen, 1988

Material examined. **Kamchatka Peninsula.** 5 km west of Mt. Vilyuchinsky, 1♂, 1♀, 3. vii. 1996 (RBK; CBM-ZI 82773–82774). 15 km south of Paratunka, 6♂, 1♀, 3. vii. 1996

(RBK; CBM-ZI 82775–82781).

Distribution. Kamchatka Peninsula; Northeastern China.

Remarks. This is the first additional record of *D. jilinensis* after the original description from Jilin, China. A closely related species, *D. lobistyla* Griffiths, 1991, is widely found in western North America. *D. jilinensis* is different from *D. lobistyla* in having the surstyli with a triangular inner lobe, the cercal plate with longer setae and the 5th sternite with almost bare basal plate.

28. *Delia linearis* (Stein, 1898)

Delia flabellifera: Suwa, 1981: 9 (Kuril Islands).

Material examined. **Kamchatka Peninsula.** Bystraya River (Riverside), 11 km north of Malka, 2♂, 5. vii. 1996 (RBK; CBM-ZI 82782–82783).

Kuril Islands. Shumshu Island: Lake Bol'shoye, 6♂, 3♀, 21. vii. 1997 (RBK; CBM-ZI 82784–82792). Paramushir Island: 4 km north of Severo-Kuril'sk, 1♂, 1♀, 24. vii. 1997 (A. Saito leg.; CBM-ZI 82793–82794); Shelekhovo, Shimoyur River, 1♀, 17. vii. 1997 (A. Saito leg.; CBM-ZI 82795).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; China; Europe; North America.

29. *Delia lineariventris* (Zetterstedt, 1845)

Hylemyia lineariventris: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Bystraya River (Riverside), 70 km north of Malka, 1♂, 7. vii. 1996 (RBK; CBM-ZI 82796). Basin of Bystraya River, 10 km southeast of Anavgay, 3♀, 9. vii. 1996 (RBK; CBM-ZI 82797–82799). 5 km west of Mt. Vilyuchinsky, 2♂, 1♀, 3. vii. 1996 (RBK; CBM-ZI 82800–82802). Lotnaya River (Riverside), near Azhabach'ye Lake, 3♂, 12. vii. 1996 (RBK; CBM-ZI 82803–82805). Biological Station, near Azhabach'ye Lake, 1♂, 14. vii. 1996 (RBK; CBM-ZI 82806).

Kuril Islands. Shumshu Island: Lake Bol'shoye, 1♂, 4♀, 21. vii. 1997 (RBK; CBM-ZI 82807, 82809–82812). Paramushir Island: Matrosskaya River, near Severo-Kuril'sk, 3♂, 4♀, 14. vii. 1997 (RBK; CBM-ZI 82813–82819); 3–8 km south of Severo-Kuril'sk, 1♂, 13. vii. 1997 (RBK; CBM-ZI 82820); Shelekhovo, Shimoyur River, 1♀, 17. vii. 1997 (A. Saito leg.; CBM-ZI 82821).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Northeastern China; Europe; North America.

30. *Delia longitheca* Suwa, 1974

Delia longitheca: Suwa, 1981: 10 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Korea; China; Taiwan.

31. *Delia majuscula* (Pokorny, 1889)

Hylemyia (Delia) gracilipes Ringdahl, 1930: 10 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Western China; Europe; Morocco.

32. *Delia planipalpis* (Stein, 1898)

Hylemya pilipyga: Kuwayama, 1967: 127 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Northeastern China; Europe; North America.

33. *Delia platura* (Meigen, 1826)

Hylemyia cilicrura: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 9♂, 17. vii. 1996 (RBK; CBM-ZI 82823–82831).

Kuril Islands. Simushir Island: Kitoboynaya Bay, 1♂, 10. viii. 1995 (SI95MO-010).

Distribution. Widespread in all zoogeographical regions.

34. *Delia radicum* (Linnaeus, 1758)

Delia brassicae: Hennig, 1974: 751 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Palaearctic region; North America (probably introduced, after Griffiths, 1991).

Remarks. Although the present species is now widely distributed in the Palaearctic region, it has not been recorded from Japan, Korea, or China (excluding Sinkiang). *D. radicum* is a serious pest well known as the cabbage maggot, and may have been introduced into various areas with human activities in agriculture.

35. *Delia takizawai* Suwa, 1974

Delia takizawai: Suwa, 1981: 10 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Korea; Northeastern China; Siberia (Ussuri; Zabaikal); Taiwan.

36. *Delia tenuiventris* (Zetterstedt, 1860)

Hylemyia angustitarsis: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Bystraya River Basin, 30 km north of Ganaly, 1♂, 30. vii. 1997 (A. Saito leg; CBM-ZI 82822). **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 1♂, 21. vii. 1997 (RBK; CBM-ZI 82808). Rasshua Island: around Beloye and Tikhoye Lakes, 1♂, 12. viii. 1995 (RAS95 MO-013). Paramushir Island: near Pernatoye Lake, south end of the island, 1♂, 3. viii. 1996 (PA96MO-009). Onekotan Island: Nemo Bay, northern part of Onekotan, 3♂, 4. viii. 1996 (ON96MO-001[-010]). Matua Island: inland from Dvoynaya Bay, 5♂, 14. viii. 1996 (MA 96MO-042B). Urup Island: Novo-kuril'sky Bay, near Tigrovyy Cape, 2♂, 4. viii. 1995 (UR95MO-008).

Distribution. Kamchatka Peninsula; Kuril Islands; Sakhalin; Japan; Korea; China; Siberia (Irkutsk); Scandinavia; North America.

37. *Delia unispina* Yudin, 1976

Delia unispina Yudin, 1976: 50 (Kamchatka, type locality).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Mongolia; North America.

38. *Egle ciliata* (Walker, 1849)

"*Hylemyia muscaria* (Fabricius)": Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Korea; Northeastern China; Europe; North America.

39. *Egle parva* (Robineau-Desvoidy, 1830)

Hylemyia parva: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Korea; China; Europe.

40. *Egle steini* (Schnabl, 1911)

Hylemyia ? steini: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Northeastern China; Europe.

Remarks. This species has been known from Europe, and recently recorded from northeast China. Identification of *Egle* species is difficult unless their genital structure is carefully examined, and the record of the species from China may need a verification. Although the species has also been recorded from North America (Huckett, 1965), this is not confirmed by G.C.D. Griffiths (in litt.). According to him, there is a closely related (probably undescribed) species to *E. steini* in North America. It is, therefore, tentative to include *E. steini* here.

41. *Eustalomyia histrio* (Zetterstedt, 1838)

Eustalomyia histrio: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Korea; Europe.

Remarks. The North American *E. brixia* (Walker, 1849) was often treated as a synonym of *E. histrio*, but it is now tentatively recognized as a full species (Griffiths, 1996).

42. *Eutrichota frigida* (Zetterstedt, 1845)

Pegomyia frigida: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Europe; North America.

43. *Fucellia antennata* Stein, 1910

Fucellia antennata: Hennig, 1966: 7 (Kamchatka).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 1♂, 21. vii. 1997 (RBK; CBM-ZI 82832).

Distribution. Kamchatka Peninsula; Kuril Islands; North America.

Remarks. This species is widely distributed in North America mainly from Alaska to Qubeck (Huckett, 1965). In the Palaearctic region, it has been known only from Kamchatka (Oljutora Bay; Ust-Kamtchatsk; Hennig, 1966).

44. *Fucellia apicalis* Kertész, 1908

Fucellia apicalis: Kuwayama, 1967: 127 (Kuril Islands); Suwa, 1981: 3 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Korea; China.

45. *Fucellia fucorum* (Fallén, 1819)

Fucellia fucorum: Ringdahl, 1930: 5 (Kamchatka); Huckett, 1965: 26 (Commander Islands); Hennig, 1966: 11 (Commander Islands; Kamchatka Peninsula; Kuril Islands); Suwa, 1981: 4 (Kuril Islands).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 2♂, 2♀, 21. vii. 1997 (RBK; CBM-ZI 82833–82836). Paramushir Island: Utesnyi, 9♂, 5♀, 1. viii. 1996 (PA 96MO-001B). Onekotan Island: Nemo Bay, northern part of Onekotan, 2♀, 4. viii. 1996 (ON96MO-001[-010]); near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 4♂, 3♀, 9. viii. 1996 (ON96MO-030B). Kharimkotan Island: Severgina Bay, northern end of Kharimkotan, 2♂, 5♀, 4. viii. 1996 (KH96 MO-023), 7♂, 8♀, 4. viii. 1996 (KH96MO-027). Rasshua Island: Yoriki-hama, 1♂, 13. viii. 1995 (RAS-95-MO-14). Ushishir Island: Kraternaya Bay, Yankicha Island, 3♂, 2♀, 14. viii. 1995 (US95MO-020), 2♂, 1♀, 20. viii. 1995 (US95MO-040). Simushir Island: Kitoboynaya Bay, 3♂, 10. viii. 1995 (SI95MO-010). Chirpoi Island: Peschanaya Bay, 3♀, 23. viii. 1995 (CH95MO-050), 1♀, 23. viii. 1995 (CH95 MO-049). Urup Island: Natalii Bay, Vesetaya River, 3♂, 4♀, 6. viii. 1995 (UR95MO-006); Negodnaya Bay, 2♀, 29. viii. 1995 (UR95MO-072).

Distribution. Kamchatka Peninsula; Commander Islands; Kuril Islands; Sakhalin; Japan; Europe; Iceland; Spitsbergen; North America; Greenland.

46. *Fucellia hypopygialis* Ringdahl, 1930

Fucellia hypopygialis Ringdahl, 1930: 7 (Kamchatka, type locality); Huckett, 1965: 26 (Commander Islands); Hennig, 1966: 13 (Kamchatka); Suwa, 1981: 4 (Kuril Islands).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 4♂, 4♀, 21. vii. 1997 (RBK; CBM-ZI 82837–82844). Urup Island: Otkrytyy Bay, Vesetaya River, 2♂, 1♀, 4. viii. 1995 (UR95MO-002).

Distribution. Kamchatka Peninsula; Commander Islands; Kuril Islands; Japan; North America; Greenland.

47. *Fucellia kamtchatica* Ringdahl, 1930

Fucellia kamtchatica Ringdahl, 1930: 7 (Kamchatka, type locality); Huckett, 1965: 26 (Commander Islands); Hennig, 1966: 14 (Kamchatka); Kuwayama, 1967: 127 (Kuril Islands); Suwa, 1981: 4 (Kuril Islands).

Material examined. **Kuril Islands.** Onekotan Island: near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 1♀, 9. viii.

1996 (ON96MO-030B).

Distribution. Kamchatka Peninsula; Commander Islands; Kuril Islands; Sakhalin; Japan; Korea; Northeastern China; Alaska.

48. *Fucellia thinobia* (Thomson, 1869)

Fucellia thinobia: Huckett, 1965: 27 (Commander Islands).
Fucellia bicruciata: Hennig, 1966: 9 (Commander Islands).

Material examined. No specimen in the present collection.

Distribution. Commander Islands; North America.

49. *Hydrophoria lancifer* (Harris, 1780)

Hydrophoria conica: Ringdahl, 1930: 4 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; China; Siberia; Europe; North America (introduced; after Griffiths, 1998a).

50. *Hydrophoria linogrisea* (Meigen, 1826)

Hydrophoria linogrisea: Ringdahl, 1930: 4 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Irkutsk; Europe.

51. *Hylemya urbica* Van der Wulp, 1896

Hylemyia variabilis: Ringdahl, 1930: 5 (Kamchatka).
Hylemya latifrons: Suwa, 1981: 11 (Kuril Islands).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 2♀, 21–22. vii. 1997 (RBK; CBM-ZI 82845–82846). Onekotan Island: Nemo Bay, northern part of Onekotan, 1 ex. (aberrant), 4. viii. 1996 (ON96MO-001 [-010]); near Krenitsyna Cape, southern end of Island, inland of small unnamed bay close to mouth of Trudny River, 1♂, 9. viii. 1996 (ON96MO-030B). Kharimkotan Island: Severgina Bay, northern end of Kharimkotan, 1♂, 4. viii. 1996 (KH96MO-023).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; China; Taiwan; Europe; North America.

52. *Lasiomma flavipenne* (Walker, 1849)

Hylemyia luteisquama: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Urals; Europe; North America.

53. *Lasiomma japonicum* Suwa, 1970

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 1♂, 22. vii. 1997 (RBK; CBM-ZI 82847).

Distribution. Kuril Islands; Japan; Korea.

54. *Lasiomma picipes* (Meigen, 1826)

Lasiomma octoguttatum: Suwa, 1981: 11 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Korea; China; Europe; North America.

55. *Leucophora unilineata* (Zetterstedt, 1838)

Hylephila unilineata: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Northeastern China; Europe; North America.

56. *Myopina myopina* (Fallén, 1824)

Myopina reflexa: Ringdahl, 1930: 4 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Europe; North America.

57. *Paradelia lunatifrons* (Zetterstedt, 1846)

Pegomyia minima: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; Europe; North America.

58. *Paregle audacula* (Harris, 1780)

"*Hylemyia radicum* (Linnaeus)": Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kuril Islands.** Paramushir Island: Matrosskaya River, near Severo-Kuril'sk, 2♂, 1♀, 14. vii. 1997 (RBK; CBM-ZI 82848–82850). Kharimkotan Island: Severgina Bay, northern end of Kharimkotan, 1♀, 8. viii. 1996 (KH96MO-027).

Distribution. Holarctic region; Australia and Tasmania (introduced).

59. *Pegomya bicolor* (Wiedemann, 1817)

Material examined. **Kamchatka Peninsula.** 5 km west of Mt. Vilyuchinsky, 1♀, 3. vii. 1996 (RBK; CBM-ZI 82851).

Kuril Islands. Paramushir Island: Matrosskaya River, near Severo-Kuril'sk, 1♂, 14. vii. 1997 (RBK; CBM-ZI 82852). Matua Island: inland from Dvoynaya Bay, 1♂, 14. viii. 1996 (MA96MO-042B). Urup Island: Negodnaya Bay, 1♀, 29. viii. 1995 (UR95MO-072).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Korea; China; Europe; North America.

60. *Pegomya criniventris* Suwa, 1974

Pegomya criniventris: Suwa, 1981: 12 (Kuril Islands).

Material examined. **Kamchatka Peninsula.** Lotnaya River (Riverside), near Azhabach'ye Lake, 1♀, 12. vii. 1996 (RBK; CBM-ZI 82853).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Korea; China.

61. *Pegomya geniculata* (Bouché, 1834)

Pegomya geniculata: Suwa, 1981: 13 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; China; Europe; North America.

62. *Pegomya notabilis* (Zetterstedt, 1846)

Material examined. **Kamchatka Peninsula.** Bystraya River (Riverside), 11 km north of Malka, 1♂, 5. vii. 1996 (RBK; CBM-ZI 82854).

Distribution. Kamchatka Peninsula; Europe; Iceland; North America; Greenland.

63. *Pegomya pulchripes* (Loew, 1857)

Pegomya pulchripes: Suwa, 1981: 13 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan; Europe.

64. *Pegomya rubivora* (Coquillett, 1897)

Pegomyia dentiens: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** 14 km south of Paratunka, 1♂, 1♀, 7. vii. 1997 (RBK; CBM-ZI 82855-82856); 15 km south of Paratunka, 1♂, 3. vii. 1996 (RBK; CBM-ZI 82857).

Distribution. Kamchatka Peninsula; Japan; Korea; Northeastern China; Europe; North America.

65. *Pegomya ruficeps* (Zetterstedt, 1838)

Pegomyia solitaria: Ringdahl, 1930: 5 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Bystraya River Basin, 30 km north of Ganaly, 2♀, 30. vii. 1997 (A. Saito leg.; CBM-ZI 82858–82859).

Distribution. Kamchatka Peninsula; Japan; Northeastern China; Europe; North America.

66. *Pegomya vera* Suwa, 1974

Pegomya vera: Suwa, 1981: 13 (Kuril Islands).

Material examined. No specimen in the present collection.

Distribution. Kuril Islands; Japan.

67. *Pegomya vittigera* (Zetterstedt, 1837)

Pegomyia vittigera: Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the pre-

sent collection.

Distribution. Kamchatka Peninsula; Urals; Europe; North America.

68. *Pegoplata infirma* (Meigen, 1826)

"*Hylemyia dissecta* (Meigen)": Ringdahl, 1930: 5 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Japan; China; Europe; North America.

69. *Pegoplata tundrica* (Schnabl, 1915)

"*Pegomya* (*Nupedia*) *patellans* (Pandellé)": Huckett, 1965: 135 (partim; Commander Islands).

Pegoplata tundrica: Griffiths, 1986: 644 (Bering Island).

Material examined. No specimen in the present collection.

Distribution. Commander Islands; Siberia (Karskaya, Tobolsk District); Europe; North America; Greenland.

70. *Subhylemyia longula* (Fallén, 1824)

Material examined. **Kamchatka Peninsula.** Hot Spring (Riverside), Malka, 1♂, 17. vii. 1996 (RBK; CBM-ZI 82860).

Distribution. Kamchatka Peninsula; Western China; Siberia (Omsk; Irkutsk); India; Europe; Canary Islands; North America.

71. *Zaphne ambigua* (Fallén, 1823)

Acroptena ambigua: Ringdahl, 1930: 4 (Kamchatka).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 1♂, 22. vii. 1997 (RBK; CBM-ZI 82861).

Distribution. Kamchatka Peninsula; Kuril Islands; Japan; Northeastern China; Europe; North America.

72. *Zaphne brunneifrons* (Zetterstedt, 1838)

Acroptena kamtchatica Ringdahl, 1930: 8 (Kamchatka, type locality).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Europe; North America.

Remarks. The synonymy of *Z. kamtchatica* with *Z. katmaiensis* (Malloch, 1920) (=*Z. brunneifrons*) is due to Huckett (1944). This may need confirmation by further comparison.

73. *Zaphne fasciculata* (Schnabl, 1915)

Acroptena incisurata: Ringdahl, 1930: 4 (Kamchatka).

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 3♂, 21. vii. 1997 (RBK; CBM-ZI 82862–82864).

Distribution. Kamchatka Peninsula; Kuril Islands; Northeastern China; Siberia (Karskaya, Tobolsk District); Europe; North America.

74. *Zaphne ignobilis* (Zetterstedt, 1845)

Acroptena ignobilis: Ringdahl, 1930: 4 (Kamchatka).

Material examined. No specimen in the present collection.

Distribution. Kamchatka Peninsula; Northeastern China; Scandinavia; North America.

75. *Zaphne nuda* (Schnabl, 1911)

Material examined. **Kuril Islands.** Shumshu Island: Lake Bol'shoye, 28♂, 22♀, 21–22.vii. 1997 (RBK; CBM-ZI 82865–82892, 82899–82920).

Distribution. Kuril Islands; Northeastern China; Europe; North America.

76. *Zaphne zetterstedti* (Ringdahl, 1918)

Acroptena zetterstedti: Ringdahl, 1930: 4 (Kamchatka).

Material examined. **Kamchatka Peninsula.** Bystraya River Basin, 30 km north of Ganaly, 1♂, 30. vii. 1997 (A. Saito leg.; CBM-ZI 82921). Mt. Vachkazhets, upper part of Takhkoloch River, Basin of Plotunikova, 1♂, 3. viii. 1997 (RBK; CBM-ZI 82922).

Distribution. Kamchatka Peninsula; China; Scandinavia; North America.

Notes on the Anthomyiid Faunas of Kamchatka and the Kuril Islands

The anthomyiid fauna of Kamchatka is

Table 1. Distributional patterns of the anthomyiid species of Kamchatka and Kurils.

Distributional category	Number of species in	
	Kamchatka	Kurils
1. Endemic	0 (0%)	0 (0%)
2. East Palaearctic	5 (9.3%)	11 (25.0%)
3. Transpalaearctic	8 (14.8%)	7 (15.9%)
4. Holarctic	35 (64.8%)	22 (50.0%)
5. East Palaearctic —North America	6 (11.1%)	4 (9.1%)
Total	54 (100%)	44 (100%)

now represented by 54 species and that of the Kuril Islands by 44 species. They are grouped into the following categories based on their distribution (Table 1):

1. Endemic. Some species were described from Kamchatka as new to science by Ringdahl (1930) and Yudin (1976). These have, however, been found to have a wider distribution or are now treated as junior synonyms of species described from elsewhere. There are no species originally described from the Kuril Islands. Thus, no endemic anthomyiids are presently known.

2. East Palaearctic. They are also found elsewhere in eastern Asia, but have not been recorded from Europe or North America.

3. Transpalaearctic. They have been found in Europe, but not in North America. The presence of *Delia radicum* and *Hydrophoria lancifer* in North America is assumed to be due to accidental introduction from Europe (Griffiths, 1991, 1998a). The two species are referred to the present category.

4. Holarctic. These are widely distributed from Europe to North America. Some of them have no records in the vast area between Europe and Far East. This may not be a real reflection of their actual distribution.

5. East Palaearctic—North America. In North America, these species are all found in Alaska and other states except for one species (*Fucellia kamtchatica*) recorded only from Alaska. In the Palaearctic region, they are restricted to eastern ranges and have not been found in Europe. *Botanophila appendiculata* is transferred to Category 4 if it is conspecific with *B. biciliaris* known from Europe.

In the fauna of Kamchatka, Table 1 clearly shows a high percentage of species common to North America (Categories 4 and 5, 41 spp., 75.9%). This numerical value is almost equal to that of species common to Europe (Categories 3 and 4, 43 spp., 79.6%). This may be due to the existence of unglaciated Beringia during the maximum of the Würm (Wisconsinan) glacial period (around 20000 years BP) and, as pointed out by Griffiths (1997), to the result of a great dispersal ability of anthomyiid flies. The percentage of species common to Japan (Table 2, 32 of 54 spp., 59.3%) is much smaller than that of species common to Europe or to North America, although Japan has a history of land connection with continental Asia during most of the Pleistocene. During any given period with stable climate, east-west dispersal is in general easier than north-south, and the distributions of the organisms usually tend towards latitudinal zonation to various degrees. For the anthomyiid flies, it may be allowed to say that Kamchatka is situated at equal distances from Europe and North America, but much farther from Japan from a bio-

Table 2. Numbers of anthomyiid species of Kamchatka and Kurils occuring in adjacent territories.

	Kamchatka	Kurils			
		Whole	North	Middle	South
Common to:					
Kamchatka	—	22	17	5	9
Japan	32	39	20	8	21
Hokkaido	28	36	17	8	21
Honshu	21	31	14	4	18
Not common to Japan	22	5	5	0	0
Total	54	44	25	8	21

geographical point of view. In this connection, Griffiths (l.c.) noted: "The concept of a unitary Holarctic region containing a Beringian subregion accords better with the anthomyiid data here presented than the customary separation of Palaearctic and Nearctic regions at the Bering Strait."

In the fauna of Kuril Islands, the percentage of species common to Japan is 100% (21 spp.), 100% (8 spp.) and 80% (20 of 25 spp.) in the South, Central and North Kuril Islands respectively, and 88.6% (39 of 44 spp.) in the Kuril Islands as a whole (Table 2). On the other hand, the percentage of species common to Kamchatka decreases from north to south: 68% (17 of 25 spp.), 62.5% (5 of 8 spp.) and 42.9% (9 of 21 spp.) in the North, Middle and South Kuril Islands respectively, and 50% (22 of 44 spp.) in the Kuril Islands as a whole. The present data clearly indicate much excess of Japanese over Kamchatkan elements in the Kuril fauna. But this is not acceptable as an actual fact. We know too little about the fauna of Kamchatka in contrast to that of Japan. The statistical values for species common to Kamchatka will become much higher with the progress of faunal investigations in Kamchatka. Of the 25 species known from North Kuril Islands, 8 species are not recorded from Kamchatka. Five of these 8 species belong to Category 3, 4, or 5, and are quite likely to occur also in Kamchatka. The remaining three species are *Botanophila clavata, Botanophila isikariana,* and *Lasiomma japonicum,* all belonging to Category 2. *B. clavata* and *L. japonicum* occur also in continental Asia, and it is not unreasonable to assume that they have colonized the North Kuril Islands through Kamchatka. The present discovery of *B. isikariana* in the North Kuril Islands is the first record of the species outside Japan. This species has been collected at seasides in Japan, and a seaside plant, *Lathyrus maritimus,* is known as its larval host. It cannot be denied that the species has spread northwards along the Kuril Islands from Hokkaido. It may be appropriate to say that in practice the North and South Kuril Islands are extensions of Kamchatka and Hokkaido respectively for the anthomyiid flies. Endemic species of Anthomyiidae are hardly to be expected on the Kuril Islands. The importance of the Kuril Islands may consist of their role as a dispersal route during the Pleistocene. Although this route may have been secondary to Sakhalin in effectiveness, the Kuril Islands might have been the sole route for some species. Available information on the faunas concerned is too meagre to say more.

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カムチャツカおよび千島列島のハナバエ相（双翅目：ハナバエ科）

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1996年と1997年に，カムチャツカ半島と北千島において千葉県立中央博物館とロシア科学アカデミーで行われた生物学共同調査と，1995年と1996年に日本，アメリカ，ロシアの三国共同で実施された国際千島生物相調査(IKIP)の両調査において採集されたハナバエ科標本を検し，カムチャツカからは９新記録種を含む17種を，千島列島からは23新記録種を含む30種を認めた．従来の記録と合わせると，カムチャツカからは54種が，千島からは44種が知られることになる．このうち22種は両地域に共通である．これら76種の一覧表を提示するとともに，その分布特性について考察した．

カムチャツカ産ハナバエ類のヨーロッパおよび北米との共通率はそれぞれ79.6％と75.9％でほぼ等しい．日本との共通率は，日本列島が第四紀最新世のほとんどの期間大陸と陸続きであったとされるにもかかわらず，59.3％と著しく低い．これは南北方向よりも東西方向の分散が一般的に容易であることの反映であり，ハナバエ類にとってカムチャツカは生物地理学的観点からは欧米から等距離にあり，日本との距離はより遠いと言える．千島列島のハナバエ相はカムチャツカおよび日本（北海道）からの移入種によって形成されており，固有種を欠いている．両地域からは未発見の３種が北千島から見いだされているが，このうち *Botanophila clavata* (Hennig, 1970) および *Botanophila tuxeni* (Ringdahl, 1953) は旧北区の他地域に，また *Zaphne nuda* (Schnabl, 1911) は全北区に広く分布することが知られており，カムチャツカにも分布しているものと思われる．ハナバエ相の形成に果たした千島列島の重要性は分散経路としての役割にあるものと考えられる．

韓国から記載された *Acklandia koreacola* Suh and Kwon, 1985 およびシベリアから記載された *Phorbia pegohylemyioides* Yudin, 1979 は，それぞれカムチャツカから記載された *Acklandia aculeata* (Ringdahl, 1930) および *Acklandia subgrisea* (Ringdahl, 1930) の同物異名とした．

Appendix. Check List of Anthomyiidae of Kamchatka and Kurils

L: record in literature; P: present collection; —: no record.

Kam: Kamchatka; N Kur: North Kurils; C Kur: Central Kurils (south of Shiashkotan I.); S Kur: South Kurils (south of Simushir I.); Hokk: Hokkaido; Hon: Honshu; Categ: Distributional category (see text).

Species	Kam	N Kur	C Kur	S Kur	Hokk	Hon	Categ
1. *Acklandia aculeata* (Ringdahl, 1930)	L	—	—	—	—	—	2
2. *Acklandia subgrisea* (Ringdahl, 1930)	L	—	—	—	—	L	2
3. *Adia cinerella* (Fallén, 1825)	L	—	—	—	L	L	4
4. *Alliopsis silvatica* (Suwa, 1974)	—	—	—	L	L	L	2
5. *Alliopsis silvestris* (Fallén, 1824)	L	P	—	—	L	L	4
6. *Botanophila angulosa* (Ringdahl, 1930)	L	LP	P	—	L	—	2
7. *Botanophila appendiculata* (Malloch, 1920)	—	P	P	—	L	—	5
8. *Botanophila betarum* (Lintner, 1883)	P	—	—	LP	L	L	4
9. *Botanophila clavata* (Hennig, 1970)	—	P	—	—	—	—	2
10. *Botanophila fugax* (Meigen, 1826)	L	P	—	—	L	L	4
11. *Botanophila hucketti* (Ringdahl, 1935)	P	—	—	—	—	L	4
12. *Botanophila isikariana* (Suwa, 1974)	—	P	—	—	L	L	2
13. *Botanophila maculipes* (Zetterstedt, 1845)	—	—	P	—	L	L	3
14. *Botanophila nigrigenis* (Suwa, 1974)	—	—	—	P	L	L	2
15. *Botanophila profuga* (Stein, 1916)	—	P	—	—	L	L	4
16. *Botanophila rotundivalva* (Ringdahl, 1937)	—	P	—	—	—	L	3
17. *Botanophila rubrifrons* (Ringdahl, 1933)	—	—	P	—	L	—	3
18. *Botanophila rubrigena* (Schnabl, 1915)	L	P	—	—	L	L	4
19. *Botanophila spinidens* (Malloch, 1920)	L	—	—	—	—	—	5
20. *Botanophila striolata* (Fallén, 1824)	L	—	—	L	L	L	3
21. *Botanophila tuxeni* (Ringdahl, 1953)	—	P	—	—	—	—	3
22. *Delia brunnescens* (Zetterstedt, 1845)	—	—	—	L	L	L	3
23. *Delia echinata* Séguy, 1923	—	—	—	L	L	L	4
24. *Delia fabricii* (Holmgren, 1872)	LP	P	—	—	—	L	4
25. *Delia floralis* (Fallén, 1824)	LP	—	—	L	L	L	4
26. *Delia florilega* (Zetterstedt, 1845)	P	—	—	—	—	—	4
27. *Delia jilinensis* Chen, 1988	P	—	—	—	—	—	2
28. *Delia linearis* (Stein, 1898)	P	P	—	L	L	—	4
29. *Delia lineariventris* (Zetterstedt, 1845)	LP	P	—	—	—	L	4
30. *Delia longitheca* Suwa, 1974	—	—	—	L	L	L	2
31. *Delia majuscula* (Pokorny, 1889)	L	—	—	—	—	—	3
32. *Delia planipalpis* (Stein, 1898)	—	—	—	L	L	—	4
33. *Delia platura* (Meigen, 1826)	LP	—	P	—	L	L	4
34. *Delia radicum* (Linnaeus, 1758)	L	—	—	—	—	—	3
35. *Delia takizawai* Suwa, 1974	—	—	—	L	L	L	2
36. *Delia tenuiventris* (Zetterstedt, 1860)	LP	P	P	P	L	L	4
37. *Delia unispina* Yudin, 1976	L	—	—	—	—	—	5
38. *Egle ciliata* (Walker, 1849)	L	—	—	—	L	L	4
39. *Egle parva* (Robineau-Desvoidy, 1830)	L	—	—	—	L	—	3
40. *Egle steini* (Schnabl, 1911)	L	—	—	—	—	—	3
41. *Eustalomyia histrio* (Zetterstedt, 1838)	L	—	—	—	L	—	3
42. *Eutrichota frigida* (Zetterstedt, 1845)	L	—	—	—	L	—	4
43. *Fucellia antennata* Stein, 1910	L	P	—	—	—	—	5
44. *Fucellia apicalis* Kertész, 1908	—	—	—	L	L	L	2
45. *Fucellia fucorum* (Fallén, 1819)	L	LP	P	LP	L	—	4
46. *Fucellia hypopygialis* Ringdahl, 1930	L	LP	—	—	L	L	5
47. *Fucellia kamtchatica* Ringdahl, 1930	L	LP	—	L	L	L	5
48. *Fucellia thinobia* (Thomson, 1869)	L	—	—	—	—	—	5
49. *Hydrophoria lancifer* (Harris, 1780)	L	—	—	—	—	—	3

Appendix. (continued).

Species	Kam	N Kur	C Kur	S Kur	Hokk	Hon	Categ
50. *Hydrophoria linogrisea* (Meigen, 1826)	L	—	—	—	—	—	3
51. *Hylemya urbica* Van der Wulp, 1896	L	LP	—	—	L	L	4
52. *Lasiomma flavipenne* (Walker, 1849)	L	—	—	—	—	—	4
53. *Lasiomma japonicum* Suwa, 1970	—	P	—	—	L	L	2
54. *Lasiomma picipes* (Meigen, 1826)	—	—	—	L	L	L	4
55. *Leucophora unilineata* (Zetterstedt, 1838)	L	—	—	—	L	—	4
56. *Myopina myopina* (Fallén, 1824)	L	—	—	—	—	—	4
57. *Paradelia lunatifrons* (Zetterstedt, 1846)	L	—	—	—	L	—	4
58. *Paregle audacula* (Harris, 1780)	L	P	—	—	L	—	4
59. *Pegomya bicolor* (Wiedemann, 1817)	P	P	P	P	L	L	4
60. *Pegomya criniventris* Suwa, 1974	P	—	—	L	L	L	2
61. *Pegomya geniculata* (Bouché, 1834)	—	—	—	L	L	L	4
62. *Pegomya notabilis* (Zetterstedt, 1846)	P	—	—	—	—	—	4
63. *Pegomya pulchripes* (Loew, 1857)	—	—	—	L	L	L	3
64. *Pegomya rubivora* (Coquillett, 1897)	LP	—	—	—	L	L	4
65. *Pegomya ruficeps* (Zetterstedt, 1838)	LP	—	—	—	L	L	4
66. *Pegomya vera* Suwa, 1974	—	—	—	L	L	L	2
67. *Pegomya vittigera* (Zetterstedt, 1837)	L	—	—	—	—	—	4
68. *Pegoplata infirma* (Meigen, 1826)	L	—	—	—	L	—	4
69. *Pegoplata tundrica* (Schnabl, 1915)	L	—	—	—	—	—	4
70. *Subhylemyia longula* (Fallén, 1824)	P	—	—	—	—	—	4
71. *Zaphne ambigua* (Fallén, 1823)	L	P	—	—	L	—	4
72. *Zaphne brunneifrons* (Zetterstedt, 1838)	L	—	—	—	—	—	4
73. *Zaphne fasciculata* (Schnabl, 1915)	L	P	—	—	—	—	4
74. *Zaphne ignobilis* (Zetterstedt, 1845)	L	—	—	—	—	—	4
75. *Zaphne nuda* (Schnabl, 1911)	—	P	—	—	—	—	4
76. *Zaphne zetterstedti* (Ringdahl, 1918)	LP	—	—	—	—	—	4

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Calliphorid and Sarcophagid Flies (Insecta: Diptera) Collected from the Kamchatka Peninsula and North Kuril Islands in 1996–1997

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Abstract Six species of calliphorid and one species of sarcophagid flies were collected from the Kamchatka Peninsula and North Kuril Islands. These species are as follows: *Calliphora vomitoria* (Linnaeus), *C. terraenovae* (Macquart), *C. genarum* Zetterstedt, *Cynomya mortorum* (Linnaeus), *Lucilia caesar* (Linnaeus), *Protophormia terraenovae* (Robinaeu-Desvoidy), *Wohrfahrtia meigeni* (Schiner).

Key words: Diptera, Calliphoridae, Sarcophagidae, Kamchatka Peninsula, 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 a 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 belonging to the Far Eastern Branch of the Russian Academy of Sciences, Vladivostok. In this paper, a list of the calliphorid and sarcophagid flies is presented based on the material collected from the Kamchatka Peninsula and North Kuril Island during the expedition.

The specimens studied were collected by sweeping with an entomological net in grassland. They are deposited in the Natural History Museum and Institute, Chiba (CBM with a code of ZI). World distribution of the species is outlined after authentic works (Schumann, 1986; Verves, 1986).

List of Collected Species

Family Calliphoridae

Calliphora vomitoria (Linnaeus, 1758)

Material examined. **Kamchatka Peninsula:** 1 male, 12. VII. 1996, Lotnaya River (riverside) near Azhabach'ye Lake (56°07′ N, 161°50′ E), alt. ca. 20 m, R. B. Kuranishi leg., CBM-ZI 82545; 1 male, 1 female, 15. VII. 1996, Biological Station near Azhabach'ye Lake (56°11′ N, 161°59′ E), alt. ca. 20 m, R. B. Kuranishi leg., CBM-ZI 82544; 1 female, 10. VII. 1997, Nagornyi, near Petropavlovsk-Kamchatskiy (53°07′ N, 158°31′ E), alt. ca. 150 m, R. B. Kuranishi leg, CBM-ZI 82546.

Distribution. All parts of Eurasia and North America.

Calliphora terraenovae (Macquart, 1851)

Material examined. **Kamchatka Peninsula:** 2 males, 15. VII. 1996, Biological Station near Azhabach'ye Lake (56°11′ N, 161°59′ E), alt. ca. 20 m, R. B. Kuranishi leg., CBM-ZI 82549.

North Kuril Islands: 2 males, 16. VII. 1997, Shelekhovo (50°22′ N, 155°37′ E), alt. 10 m, R. B. Kuranishi leg., CBM-ZI 82548.

Distribution. North America and Far East Russia.

Calliphora genarum Zetterstedt, 1938

Material examined. **North Kuril Islands:** 1 female, 13. VII. 1997, 3–8 km south of Severo-Kuril'sk (50°38′ N, 156°08′ E), alt. 5–30 m, A. Saito leg., CBM-ZI 82550; 1 male, 17. VII. 1997, Shelekhovo to Shimoyur River (50°22′ N, 155°37′ E–50°22′ N, 155°34′ E), alt.

0–100 m, A. Saito leg.

Distribution. Europe to Far East Russia.

***Cynomya mortuorum* (Linnaeus, 1758)**

Material examined. **Kamchatka Peninsula:** 1 male, 10. VII. 1996, riverside 25 km west of Klyuchi (56°19′ N, 160°24′ E), alt. ca. 150 m, R. B. Kuranishi leg., CBM-ZI 82551.

Distribution. Europe to Far East Russia, Mongolia and China.

***Lucilia caesar* (Linnaeus, 1758)**

Material examined. **Kamchatka Peninsula:** 1 male, 7. VII. 1997, 5 km south of Paratunka (53°05′ N, 158°22′ E), alt. 120 m, A. Saito leg., CBM-ZI 82539; 2 males, 1 female, 10. VII. 1997, Nagornyi, near Petropavlovsk-Kamchatskiy (53°07′ N, 158°31′ E), alt. ca. 150 m, R. B. Kuranishi leg., CBM-ZI 82541–82542; 2 males, 30. VII. 1997, Bystraya River basin, 30 km north of Ganaly, (53°58′ N, 157°45′ E)alt. ca. 390 m, A. Saito leg., CBM-ZI 82537–82538; 1 female, 9. VII. 1997, Tikhayia River, about 30 km from Petropavlovsk-Kamchatskiy (53°05′ N, 158°22′ E), alt. ca. 40 m, R. B. Kuranishi leg., CBM-ZI 82540.

North Kuril Islands: 1 male, 16. VII. 1997, Shelekhovo (50°22'N, 155°37'E), alt. 10 m, A. Saito leg., CBM-ZI 82543; 1 male, 19. VII. 1997, Shelekhovo (50°22′ N, 155°37′ E), alt. 10 m, A. Saito leg., CBM-ZI 82536.

Distribution. All parts of Eurasia.

***Protophormia terraenovae* (Robineau-Desvoidy, 1830)**

Material examined. **Kamchatka Peninsula:** 1 male, 13. VII. 1996, inlet small stream, Azhabach'ye Lake (left side) (56°09′ N, 161°55′ E), alt. ca. 20 m, R. B. Kuranishi leg., CBM-ZI 82547.

Distribution. All parts of Eurasia and North America.

Family Sarcophagidae

***Wohrfahrtia meigeni* (Schiner, 1862)**

Material examined. **Kamchatka Peninsula:** 1 male, 12. VII. 1996, Lotnaya River (riverside) near Azhabach'ye Lake (56°07′ N, 161°50′ E), alt. ca. 20 m, R. B. Kuranishi leg., CBM-ZI 82552.

Distribution. Eurasia and 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クロバエ科・ニクバエ科昆虫

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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，スイーピング法でクロバエ科・ニクバエ科昆虫を採集した．カムチャツカ半島からクロバエ科4属5種，ニクバエ科1属1種，北千島のパラムシル島からクロバエ科2属2種を記録した．

今回採集された材料中には，*Calliphora vomitoria* (Linnaeus) や *Calliphora terraenovae* (Macquart) のように衛生害虫となっていると考えられる種もいたが，他の地域では稀にしか採集されない *Calliphora genarum* Zetterstedt などの種を含んでいた．