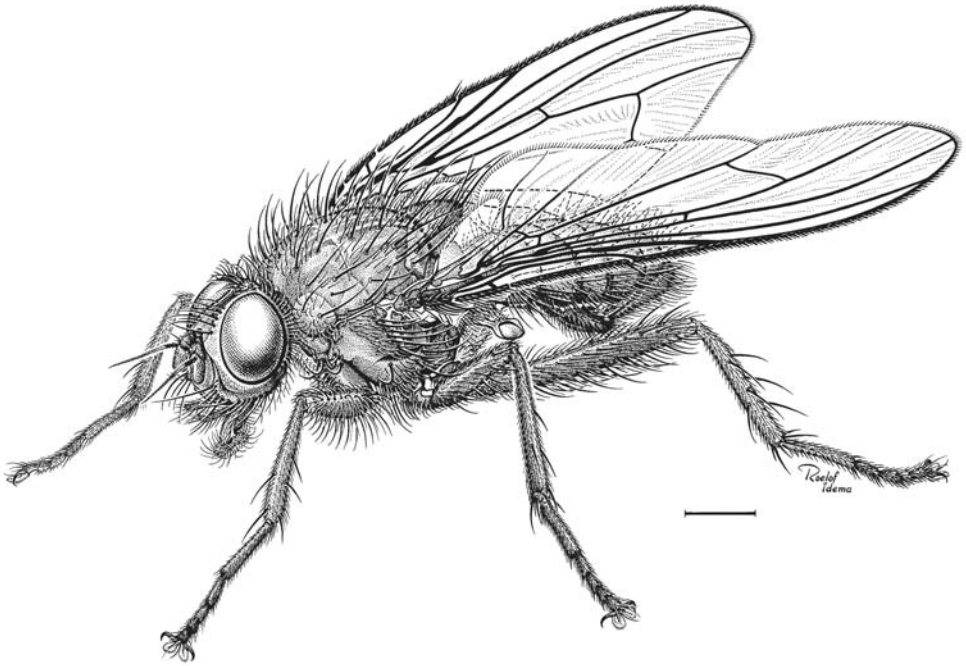


Anthomyiid flies of the Yukon



FRONTISPIECE. *Eutrichota woodi* Griffiths, male, an anthomyiid recorded only from the Yukon on open slopes above treeline. Scale line 1 mm.

Anthomyiid Flies (Diptera: Anthomyiidae) of the Yukon

GRAHAM C.D. GRIFFITHS

Department of Biological Sciences, University of Alberta
Edmonton, Alberta, Canada T6G 2E9

Abstract. The distributions of 167 species (or in a few cases subspecies) of Anthomyiidae occurring in Alaska (exclusive of the Panhandle) and Yukon are analysed in order to elucidate the biogeographic significance of East Beringia (the unglaciated portion of Alaska and Yukon). The 150 species/subspecies occurring in East Beringia (146 confirmed and 4 expected) can be placed in the following categories: 11 (7.3%) are Beringian, 17 (11.3%) have Palaearctic-East Beringian distributions, 34 (22.7%) have Nearctic including East Beringian distributions, 87 (58.0%) have Holarctic including Beringian distributions, and 1 (0.7%) is a South American species presumably introduced. The Beringian endemic species are mostly associated with open tundra. The proportion of Holarctic anthomyiid species is significantly higher than reported for noctuid moths and carabid beetles, selected as groups of comparable diversity whose Beringian fauna has been well investigated. It is suggested that this may be because anthomyiids have a greater potential for active aerial dispersal. The anthomyiid data accord better with the concept of a unitary Holarctic region containing a Beringian subregion than with the customary separation of Palaearctic and Nearctic regions at the Bering Strait.

Résumé. Les anthomyies (Diptera: Anthomyiidae) du Yukon. L'examen de la répartition de 167 espèces (en quelques cas sous-espèces) d'anthomyies de l'Alaska (à l'exclusion du prolongement sud-est) et du Yukon a permis de jeter de la lumière sur l'importance biogéographique de la Béringie orientale (la partie de l'Alaska et du Yukon qui a échappé aux glaciations). Les 150 espèces/sous-espèces de la Béringie orientale (146 effectivement trouvées et 4 espèces probables) peuvent être classifiées dans les catégories suivantes: 11 (7,3%) sont strictement béringiennes, 17 (11,3%) vivent dans la zone paléarctique et dans la Béringie orientale, 34 (22,7%) ont une répartition néarctique (recouvrant aussi la Béringie orientale), 87 (58%) sont holarctiques (vivant aussi en Béringie orientale) et 1 (0,7%) est sud-américaine, probablement introduite. Les espèces endémiques en Béringie sont surtout associées à la toundra ouverte. La proportion des espèces holarctiques d'anthomyies est considérablement supérieure à celle qui est signalée dans le cas des noctuides (Lépidoptères) ou des carabes (Coléoptères) qui sont considérés comme des groupes de diversité comparable dont la faune béringienne a été bien étudiée; il est possible que ce phénomène soit attribuable à la capacité plus grande de dispersion aérienne des anthomyies. Ces données semblent mieux correspondre au concept d'une région holarctique unifiée contenant une sous-région béringienne qu'à celui de la séparation classique des régions paléarctique et néarctique au niveau du détroit de Bering.

Introduction

The Anthomyiidae (or flower-flies) are one of the most abundant and diverse groups of Diptera in boreal, alpine and low arctic regions of the Northern Hemisphere. The adults feed on nectar and therefore play a significant role as pollinators. In most genera nectar and other sugary secretions (such as honey dew and tree sap) seem to be the sole sources of adult nutrition; exceptionally (in *Alliopsis* and *Zaphne*) the adults also feed as predators of small flying insects, especially chironomid midges. All anthomyiids are active fliers and bisexual. None of the northern species shows any of the unusual adaptations (e.g. brachyptery, parthenogenesis or nonfeeding) reported in other groups of insects, and indeed such adaptations are totally unknown in this family. The larval biology varies considerably among genera. Saprophagous larvae feeding on dung or other decomposing material (probably the primitive type of biology) are found in genera such as *Eutrichota*, *Pegoplata*, *Hylemyza*, *Hylemya*, *Anthomyia*, *Lasiomma*, *Adia* and *Paregle*. Phytophagous larvae, feeding as root maggots, stem borers, leaf miners or inside seedpods, are found in *Pegomya*, *Delia*, *Phorbia*, *Botanophila* and *Chirosia*; those of *Strobilomyia* feed in cones of conifers, those of *Egle* in



FIG. 1. Distribution of *Pegomya indicta* Hockett (10), a Beringian endemic species associated with gravel bars where its larval hostplant, *Artemisia tilesii* Ledeb., grows.

willow catkins. Fungal fruiting bodies are the specialty of one subgroup of *Pegomya*, rotting seaweed of *Fucellia*. Larvae of *Leucophora* and *Eustalomyia* are cleptoparasites in the nests of bees and wasps (respectively). Among northern genera the possibility of a predatory larval biology comes into question only for *Alliopsis*, but these larvae are little known. Anthomyiid larvae are not normally found in vertebrate carrion.

Much information on the anthomyiid fauna of the Yukon Territory and other parts of Northern Canada and Alaska was presented in the pioneering work by Hockett (1965), but I have found in the course of my work that his species concepts and records require considerable revision. For the present I think it more reliable to restrict biogeographical analysis to the genera treated in the first ten issues of my revision of Anthomyiidae in the *Flies of the Nearctic Region* series (Griffiths 1982–93). Included there are treatments of 403 Nearctic species, probably representing about two-thirds of the eventual Nearctic total for Anthomyiidae as a whole. 131 of these species have been collected in the Yukon Territory, and a further 20 are expected (for a total of 151 confirmed or expected). Because of this high proportion of species occurring in the Yukon and the rather comprehensive information available on their distribution in North America, it seems appropriate to select the Anthomyiidae as one of the groups to be discussed in the present book.

In order to assess the significance of the conventional division of the Northern Hemisphere into a Palaearctic and a Nearctic region (separated by the Bering Strait), species in the annotated list of the 151 Yukon species (or subspecies) are recognized to belong to one of the following broad biogeographic categories: (1) Beringian (11 spp., 8 confirmed + 3 expected), (2) Palaearctic-East Beringian (16 spp., 14+2), (3) Nearctic including East Beringian (34 spp., 31+3), (4) Nearctic excluding East Beringia (5 spp., 4+1), and (5) Holarctic including Beringian (85 spp., 74+11). Maps (Figs. 1–5) are presented for one representative of each category. Additionally I list species occurring in Alaska (exclusive of the Panhandle), but not expected in the Yukon. The Alaskan Panhandle is excluded from all consideration, since it lies below 60°N.

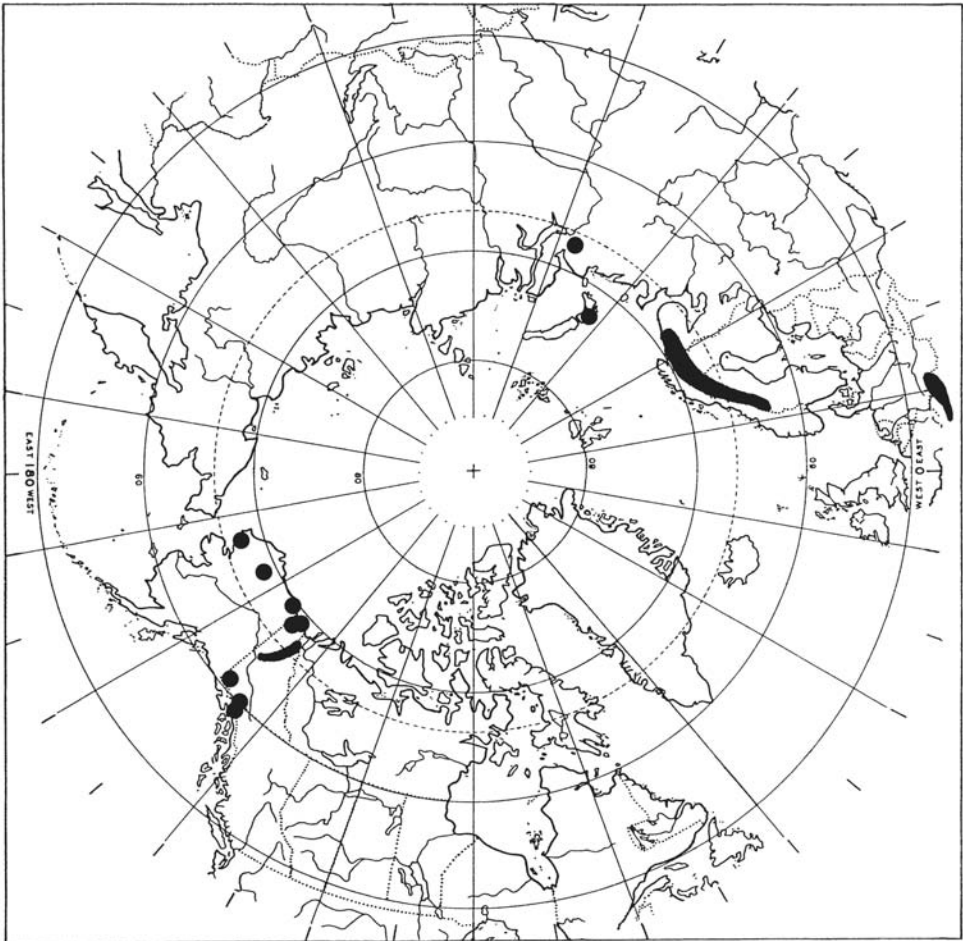


FIG. 2. Distribution of *Alliopsis glacialis* (Zetterstedt) (51), representative of the Palaearctic-East Beringian element in the Yukon fauna. The flies are found near melting snow and in other moist places both in mountains and in the arctic lowlands. (European range shown approximately, because a complete locality list is not available).

The unit of analysis is mostly the species, but subspecies for *Pegomya conformis sitiens* (5) and *Parapegomyia socculata socculata* (26). For *Delia albula albula* (112) and *Pegomya bicolor bicolor* (152), the analysis is not affected by whether the subspecies or species as a whole is considered. Nomenclature follows the Flies of the Nearctic Region except for the synonymy of *Pegomya valmariensis* with *P. setibasis* (23).

Biogeographic analysis of anthomyiid distributions is still impeded by inadequate information on the fauna of Siberia in general, and complete lack of information on the fauna of West Beringia (Chukotka and adjacent land more or less from the mountainous east bank of the Kolyma River) as defined by Yurtsev (1972). Most information on the fauna of the eastern Palaearctic relates to China, Korea and Japan, south of the range of many northern species. In this circumstance it is reasonable to assume that species reported from Europe and East Beringia but not from Siberia do in fact occur there, and not to categorize them differently from species already confirmed to be present in eastern Asia. The present analysis is restricted to species known to occur currently in the Yukon Territory, or expected to occur

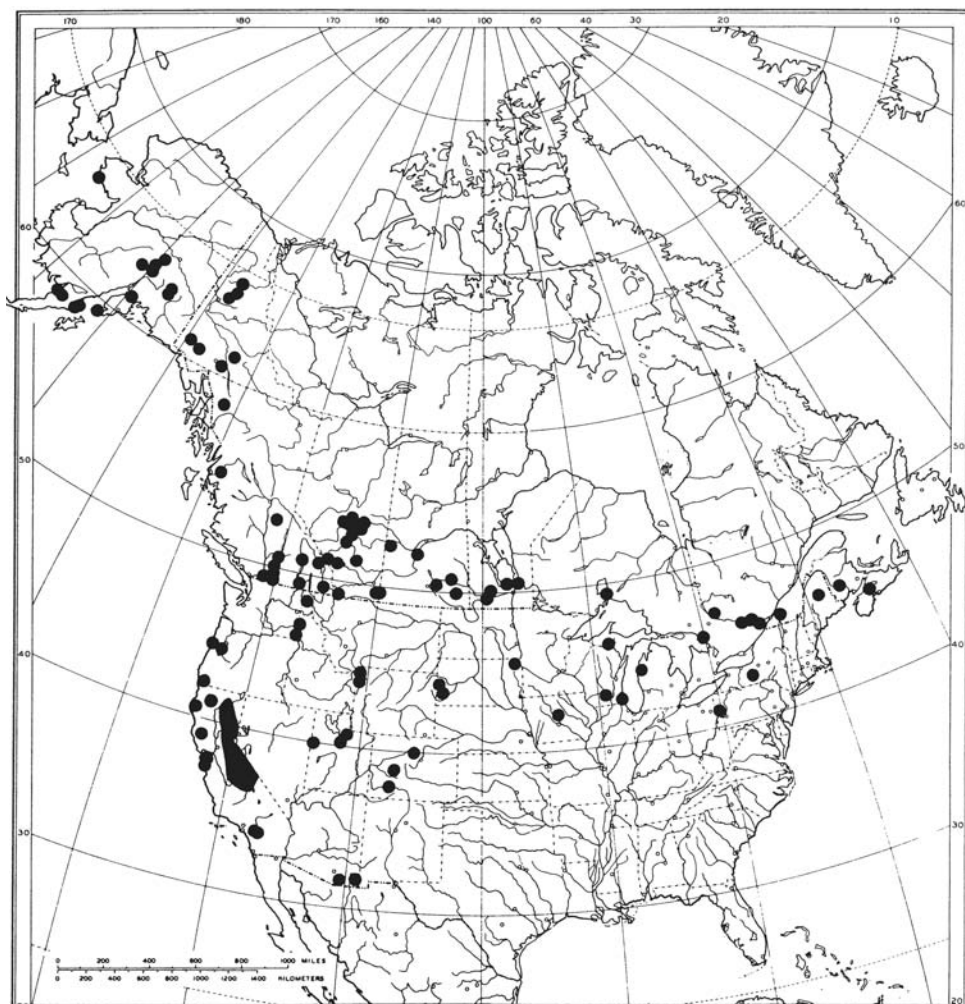


FIG. 3. Distribution of *Eutrichota tarsata* (Wulp) (37), representative of the Nearctic including East Beringian element in the Yukon fauna. This species has a boreal-Cordilleran distribution and is expected to breed in rodent burrows. (Collection sites in the continuously darkened area are too dense for individual plotting at this scale).

there on account of occurrence both to the west and east or south (e.g. species recorded both in inland Alaska and in British Columbia or the Northwest Territories). One species whose known present distribution is farther east, *Delia hudsonica* Griffiths found on sand dunes from Lake Athabasca and Coppermine to Labrador, is known as a Pleistocene fossil from the Bell Basin deposits near Old Crow (Matthews and Telka 1997). This species is not included in the analysis.

Materials and Methods

Dry mounted material of adult anthomyiids in major North American collections was identified and locality data recorded in the course of preparing my revision for the Flies of the Nearctic Region (Griffiths 1982–93). Yukon material originated from the following

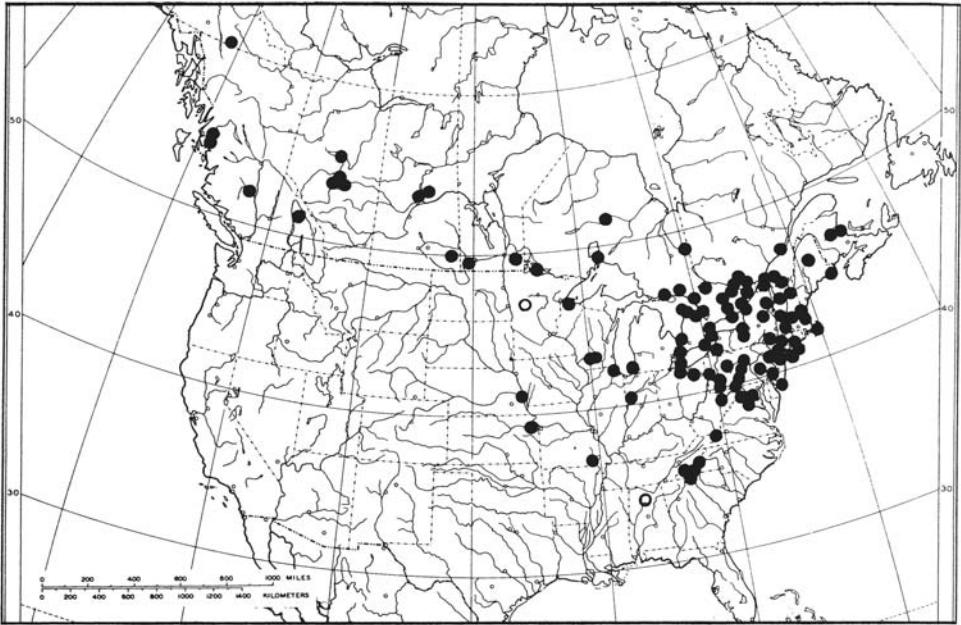


FIG. 4. Distribution of *Eutrichota lipsia* (Walker) (36), an exclusively Nearctic excluding East Beringia species first collected across the Yukon border in 1981. This is a common species in eastern North America, where it is associated with groundhog burrows. (Open circles indicate state records without locality.)

sources (with abbreviation codes): California Academy of Sciences, San Francisco (CASC), Canadian National Collection, Ottawa (CNCI), Texas A & M University, College Station (TAMU), University of Alberta, Edmonton (UASM), University of British Columbia, Vancouver (SMDV) and United States National Museum, Washington (USNM). Larvae of some phytophagous species were collected during my visits to Alaska and the Yukon in 1968 and 1969 and reared to adults, but the bulk of the material was collected by others. There is a problem that much of the material lacks habitat information. Consequently I have not been able to make any comprehensive quantitative correlation of habitat association with distribution.

Annotated List of Yukon Species

Species occurring in the Yukon Territory and Alaska exclusive of the Panhandle are documented in this annotated list. The species sequence follows that in the Flies of the Nearctic Region (Griffiths 1982–93), so that closely related species are grouped together. The broad biogeographic categories outlined above are given for each species. The main list is followed by a list of species expected (but not confirmed) to occur in the Yukon. A final list shows Alaskan species not expected to occur in the Yukon.

An alphabetic list to serve as an index is given at the end of these lists. The sequenced numbers associated with species names in this annotated list are the numbers given in the alphabetic list and in other sections of this paper.

1. *Pegomya stagnalis* Griffiths

Nearctic including East Beringian

Distribution: Alaska (Tanana Valley), Yukon, southern British Columbia and Central Alberta to Nova Scotia south to Pennsylvania, Missouri and California. Beringian distribution possibly disjunct.

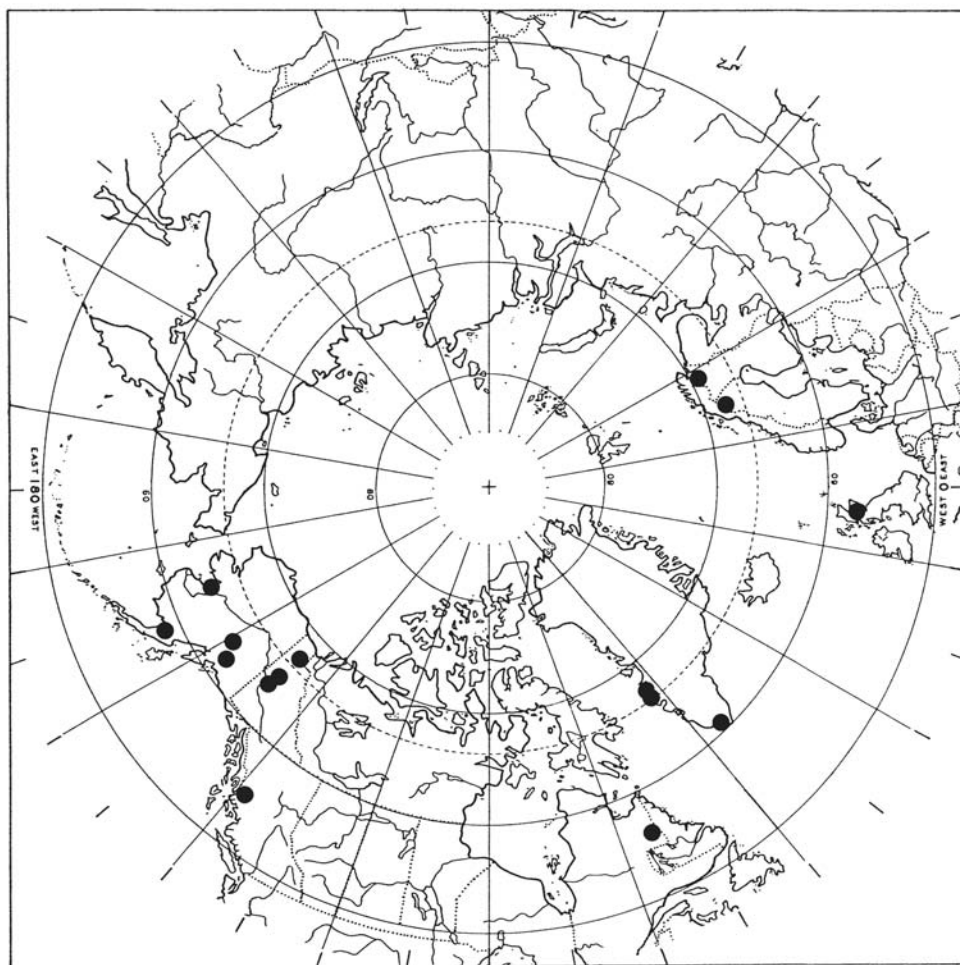


FIG. 5. Distribution of *Pegomya circumpolaris* Ackland and Griffiths (16), a truly circumpolar species representing the Holarctic including Beringian element in the Yukon fauna. This species is referred to category 5h (Circumpolar High Boreal/Low Arctic), and appears associated with moist tundra. The larvae are expected to feed on boletaceous mushrooms.

Yukon records: Old Crow (UASM).

Biological information: Larvae are leaf-miners on *Polygonum amphibium* L. and *Rumex* spp. (Polygonaceae), collected in Yukon on *R. sibiricus* Hult. which grows in marshes and on shores and river banks. Larvae collected in Yukon 25 July.

2. *Pegomya versicolor* (Meigen)

Holarctic including Beringian

Distribution: Alaska (Kotzebue, Katmai, Panhandle), Yukon, British Columbia south to central California, boreal Canada from central Alberta to Ohio and New York; northern and central Europe.

Yukon records: Old Crow (CNCI, UASM); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI).

Biological information: Larvae are leaf-miners on *Polygonum* and *Rumex* spp. (Polygonaceae), in Yukon collected on *R. sibiricus* Hult. growing along river banks. Adults collected in Yukon 18–20 June, larvae 25 July.

3. *Pegomya icterica* (Holmgren)

Holarctic including Beringian

Distribution: Alaska (Cape Thompson), Yukon, British Columbia (Chilkat Pass at 915 m), Alberta (Jasper National Park at 1800 m), Oregon (Blue Mts. at 2300 m), Baffin Island, arctic Quebec, Labrador; northern Scandinavia, Iceland, Greenland (West Coast to 71°15'N, East Coast to 70°27'N).
Yukon records: Mt. Gibben 64°42'N 139°08'W at 1310 m (SMDV).

Biological information: Larvae are leaf-miners on *Oxyria digyna* (L.) Hill (Polygonaceae), which grows in wet places in the arctic and in mountains (mainly in the alpine zone). Adults collected in Yukon on 13 July.

4. *Pegomya nigra* Suwa

Holarctic including Beringian

Distribution: Alaska (Mt. Fairplay at 1100 m), Yukon, British Columbia (Summit L. Pass at 1300 m), Alberta (Jasper National Park at 1750 m); mountains of eastern Palaearctic (Japan, northeastern China, Nepal).

Yukon records: L. Teslin (leaf mines only), km 140.5 Dempster Hwy. at 900 m (CNCI).

Biological information: Larvae are leaf-miners on *Polygonum viviparum* L. (Polygonaceae) where growing in sheltered situations. Adults collected in Yukon 17–18 July.

5. *Pegomya conformis* (Fallén) ssp. *sitiens* Hockett

Nearctic including East Beringian

Distribution: Yukon, Terrace (British Columbia) and central Alberta to Ontario and Maine, south to North Carolina and Arizona.

Yukon records: Dawson (CNCI).

Biological information: The larval hostplant in Alberta is *Chenopodium album* L. (Chenopodiaceae), in which leaf mines are formed. Possibly introduced at Dawson, since this plant is not native there. Adults collected in Yukon 6 July.

Taxonomic notes: *P. sitiens* is replaced by the typical subspecies *conformis* in the Palaearctic region.

6. *Pegomya tinctisquama* Hockett

Nearctic including East Beringian

Distribution: Alaskan North Slope to Tuktoyaktuk Peninsula south in mountains to southern California.

Yukon records: Old Crow R. 68°04'N 139°45'W (SMDV); S end Kluane L. (CASC); Whitehorse (CNCI).

Biological information: Larvae are leaf-miners on *Lupinus* spp. (Leguminosae), which occur both in forest and tundra habitats in the Yukon. Adults collected in Yukon 15 July–6 August.

7. *Pegomya pribilofensis* Hockett

Nearctic including East Beringian

Distribution: Alaska (Pribilof Islands, Cape Thompson, Naknek R., Mt. McKinley National Park, Eagle Summit), Yukon, mountains of southern California. The apparent disjunction between a Beringian and Californian distribution may be an artefact, since suitable hostplants grow in intervening areas.

Yukon records: Herschel Is. (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI); L. Teslin (CNCI, UASM).

Biological information: Larvae are leaf-miners on *Polemonium* spp. (Polemoniaceae), collected in Yukon on *P. acutiflorum* Willd. which grows along streams. Adults collected in Yukon 17 June–8 July, larvae 13 August.

8. *Pegomya depressiventris* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (Nome, Walker Fork, Panhandle), Yukon, British Columbia (Summit L. Pass at 1300 m), Alberta (Swan Hills at 1280–1360 m, Edmonton district); northern and central Europe.

Yukon records: Old Crow (SMDV); North Fork Pass km 82 Dempster Hwy. (CNCI); S end Kluane L. at 1200 m (UASM); L. Teslin (UASM).

Biological information: Larvae are leaf-miners on various large-leaved Compositae, in Yukon collected on *Petasites* and *Arnica* spp. growing in forests and marshes. Adults collected in Yukon 25–30 June, larvae 15 July–30 August.

9. *Pegomya valgenovensis* Hennig

Palaearctic-East Beringian

Distribution: Alaska (Cape Thompson), Yukon; northern and central Europe, northeastern China, Japan.

Yukon records: North Fork Pass km 82 Dempster Hwy. (CNCI); S end Kluane L. (UASM).

Biological information: Larvae are leaf-miners on *Saussurea* spp. (Compositae), collected in Yukon on *S. angustifolia* (Willd.) DC. var. *yukonensis* Pors. growing in open forest. Adults collected in Yukon 25–27 June, larvae 15 July.

10. *Pegomya indicta* Hockett

Beringian

Distribution: Alaska (Katmai) and Yukon (Fig. 1).*Yukon records:* Firth R. (CNCI); 10 km N Old Crow (CNCI); S end Kluane L. (UASM); L. Teslin (leaf-mines only).*Biological information:* Larvae are leaf-miners on *Artemisia tilesii* Ledeb. (Compositae), which grows commonly on gravel bars throughout Beringia. Adults collected in Yukon 14 July, larvae 17–30 July.**11. *Pegomya petasitae* Griffiths**

Beringian

Distribution: Alaska (L. Naknek), Yukon, Tuktoyaktuk Peninsula (Northwest Territories).*Yukon records:* Herschel Is. (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI).*Biological information:* Larvae are leaf-miners on *Petasites frigidus* (L.) Franch. (Compositae), a common herb on shores and in moist tundra. Adults collected in Yukon 12 June–9 July.**12. *Pegomya terminalis* (Rondani)**

Holarctic including Beringian

Distribution: Alaska (Fort Yukon), Yukon, British Columbia (Terrace), Alberta (Wagner Bog near Edmonton); central and southern Europe, Algeria, northern China.*Yukon records:* Kluane (SMDV).*Biological information:* Larval biology unknown, possibly associated with *Equisetum* (Equisetaceae). Adults collected in Yukon on 4 June.**13. *Pegomya winthemi* (Meigen)**

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, widespread in boreal and Cordilleran North America from British Columbia to Labrador south to southern California, Oklahoma, Illinois, New Jersey and the end of the Appalachians (Rabun Bald in Georgia); Europe, northeastern China, Japan. *Yukon records:* Old Crow (SMDV); 6 km E Old Crow (SMDV); Eagle R. km 382 Dempster Hwy. (SMDV).*Biological information:* Larvae feed on a wide range of mushrooms, especially *Leccinum* and *Boletus* (Boletaceae). Adults collected in Yukon 21 June–10 July.**14. *Pegomya transgressa* (Zetterstedt)**

Holarctic including Beringian

Distribution: Alaska (North Slope, Bering Sea Coast, Aleutians, Alaska Range, Cold Bay, Naknek), Yukon, low arctic Canada from Mackenzie Delta to Churchill (Manitoba) and Labrador north to Iqaluit (Baffin Is.), south in the mountains to New Hampshire (above 1220 m), Banff National Park (Alberta) and Mount Thornhill near Terrace at 750 m (British Columbia); northern Europe.*Yukon records:* Firth R. (CNCI); km 140 Dempster Hwy. (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI).*Biological information:* Larvae feed on mushrooms of *Leccinum* (Boletaceae). Adults collected in Yukon 7 July–8 August.**15. *Pegomya furva* Ringdahl**

Holarctic including Beringian

Distribution: Alaska (Umiat), Yukon, British Columbia (Boya L. Provincial Park, 48 km E Burns L.), Ontario (Maynooth, Petawawa), Quebec (Laniel), Maine (Mt. Katahdin at 915–1070 m); northern and central Europe.*Yukon records:* 48 km S Carmacks (TAMU).*Biological information:* Larvae feed on mushrooms of *Leccinum* (Boletaceae); larvae collected in Yukon 6 July.**16. *Pegomya circumpolaris* Ackland and Griffiths**

Holarctic including Beringian

Distribution: Alaska (Unalakleet, Naknek, Matanuska Glacier, Nenana R.), Yukon, British Columbia (16 km E Terrace), northern Quebec (Indian House L.), West Greenland (to 67°N); Scottish Highlands, northern Fennoscandia (Fig. 5).*Yukon records:* Mason Hill 67°19'N 137°40'W (SMDV); Blackstone R. km 148 Dempster Hwy. (SMDV); 22.5 km E Dawson (CNCI).*Biological information:* Closely related to *P. furva* Ringdahl, so the larvae are expected to feed on Boletaceae. Adults collected in Yukon 30 June–2 August.**17. *Pegomya zonata* (Zetterstedt)**

Holarctic including Beringian

Distribution: Alaska (widespread), throughout boreal and low arctic Canada (Yukon, British Columbia and Northwest Territories to Labrador), south to Maine (Mt. Katahdin), and in western mountains to Robson (British Columbia); West Greenland to 68°N; northern and central Europe, Japan.

Yukon records: Herschel Is. (CNCI); Cadzow L. 67°33'N 139°W (SMDV); Bluefish Caves 67°08'N 140°48'W at 610 m (SMDV); 6 km E Old Crow (SMDV); Old Crow (SMDV); Rampart House (CNCI); km 416 Dempster Hwy. at 750 m (CNCI); km 155 Dempster Hwy. at 950 m (CNCI); Tombstone Campground km 72 Dempster Hwy. (TAMU); Dawson (CNCI); 22.5 km E Dawson (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Fisheye L. near Faro (TAMU); Snag Jct. (CASC); Kluane (SMDV); Takhini Hot Springs (CASC); Whitehorse (CNCI); Watson L. (USNM).

Biological information: Larvae feed on mushrooms of *Boletus* and *Leccinum* (Boletaceae). Adults collected in Yukon 29 June–21 August, larvae 10–13 July.

18. *Pegomya scapularis* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (widespread), throughout boreal and low arctic Canada (Yukon, British Columbia and Northwest Territories to Labrador and Nova Scotia), south to Massachusetts (Petersham) and in mountains to Washington (Mt. Rainier); Fennoscandia, Japan.

Yukon records: Rampart House (CNCI); km 140 Dempster Hwy. (CNCI); Dawson (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Fisheye L. near Faro (TAMU); Rose L. 61°35'N 133°05'W (SMDV); Rancheria (CNCI).

Biological information: Larvae feed on mushrooms of *Boletus* and *Leccinum* (Boletaceae). Adults collected in Yukon 1–28 July, larvae 12–13 July.

19. *Pegomya vittigera* (Zetterstedt)

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, boreal Canada from central Alberta to southern Quebec and Maine, south in mountains to the Adirondacks (New York) and Robson (British Columbia); northern and central Europe, Urals, Kamchatka.

Yukon records: Fisheye L. near Faro (TAMU).

Biological information: Larvae feed on mushrooms of *Leccinum* (Boletaceae). Larvae collected in Yukon 12 July.

20. *Pegomya incisiva* Stein

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, British Columbia (Terrace and Robson districts), boreal Canada from central Alberta to southern Quebec, Colorado Rockies; northern and central Europe.

Yukon records: Rampart House (CNCI); Mason Hill 67°19'N 137°40'W (SMDV); North Fork Crossing (CNCI); 22.5 km E Dawson (CNCI); Dawson (CNCI); Minto Landing (CASC); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Ross R. 61°56'N 132°30'W at 914 m (CNCI); Fisheye L. near Faro (TAMU).

Biological information: Larvae normally feeding on mushrooms of *Leccinum* (Boletaceae), also in Yukon on an unidentified gilled mushroom. Adults collected in Yukon 21 June–1 August, larvae 13 July.

21. *Pegomya notabilis* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (widespread), throughout boreal and low arctic Canada (Yukon, British Columbia and Northwest Territories to Labrador), south in mountains to Robson (British Columbia), West Greenland (61–67°N); northern and central Europe, Iceland.

Yukon records: Rampart House (CNCI); Old Crow (SMDV); 6 km E Old Crow (SMDV); Bluefish Caves 67°08'N 140°48'W (SMDV); km 416 Dempster Hwy. at 750 m (CNCI); Dempster Hwy. km 155 (950 m) and km 140.5 (900 m) (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing (CNCI); Dawson (CNCI); Gravel L. 93 km E Dawson at 625 m (CNCI); Snag (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Fisheye L. near Faro (TAMU); Lone Tree Cr. 60°17'N 132°58'W (SMDV); Carcross Sand Dunes (SMDV).

Biological information: Larvae feed on mushrooms, normally of *Boletus* and *Leccinum* (Boletaceae). Adults collected in Yukon 22 June–12 August, larvae 13 July.

22. *Pegomya ruficeps* (Zetterstedt)

Holarctic including Beringian

Distribution: South Alaska (including Alaska Peninsula and Panhandle), Yukon, widely in western Cordillera from northern British Columbia to Colorado (mainly in subalpine zone inland, also at low elevation along coast of British Columbia), Mackenzie Delta, central Alberta, southern Quebec, Maine (Mt. Katahdin); northern and central Europe, northeastern China, Kamchatka, Japan.

Yukon records: Erebia Cr. 67°58'N 136°29'W at 790 m (SMDV); 58 km W Dawson (CNCI); Dawson (CNCI); Wagon Cr. 62°56'N 130°30'W (SMDV); Kluane (SMDV); Whitehorse (CNCI); Wolf Cr. km 1458–1459 Alaska Hwy. (CASC, USNM).

Biological information: Larval biology unknown. Adults collected in Yukon 1 July–1 September.

23. *Pegomya setibasis* **Huckett** Nearctic excluding East Beringia
(= *P. valmariensis* Griffiths, **new synonymy**)

Distribution: Yukon, on lower slopes (560 and 990 m) of Mt. Kobau in Okanagan Valley (British Columbia), Val Marie (Saskatchewan).

Yukon records: Whitehorse Rapids (USNM).

Biological information: Larvae suspected (but not proven) to feed on *Orobancha fasciculata* Nutt. (Orobanchaceae), a root parasite of *Artemisia* which has a Cordilleran-prairie distribution. Adults collected in Yukon on 4 July.

24. *Pegomya flavoscutellata* (**Zetterstedt**) Holarctic including Beringian

Distribution: Alaska (widespread), throughout boreal and low arctic Canada (Yukon, British Columbia and Northwest Territories to Labrador and Nova Scotia), south in mountains to Maine (Mt. Katahdin) and Colorado; northern and central Europe, northwestern China.

Yukon records: Erebia Cr. 67°58'N 136°29'W at 790 m (SMDV); 6 km SE Tack L. 67°28'N 139°41'W (SMDV); Mason Hill 67°19'N 137°40'W (SMDV); Old Crow (SMDV); 6 km E Old Crow (SMDV); Bluefish Caves 67°08'N 140°48'W (SMDV); Arctic Circle on Dempster Hwy. (SMDV); km 416 Dempster Hwy. at 750 m (CNCI); Dempster Hwy. km 155 (950 m) and km 140 (CNCI); Dawson (CNCI); Minto Landing (CASC); LaForce L. 62°41'N 132°20'W at 1006 m (CNCI); Nahanni Range Rd. 61°38'N 128°20'W (SMDV); Takhini Hot Springs (CASC); Whitehorse (CNCI); Lone Tree Cr. 60°17'N 132°58'W (SMDV); Loon L. 60°02'N 127°35'W (SMDV).

Biological information: Larvae feed on mushrooms of *Leccinum* (Boletaceae). Adults collected in Yukon 16 June–7 August.

25. *Pegomya aninotata* **Huckett** Holarctic including Beringian

Distribution: Yukon, Alberta (Banff National Park and Kananaskis Valley in montane zone), Manitoba (Churchill district), Michigan (Douglas L.), New Mexico (Magdalena Mts.); Swedish Lapland.

Yukon records: Herschel Is. (CNCI); North Fork Crossing (CNCI); Kluane (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 3 July–25 August.

26. *Parapegomyla socculata socculata* (**Zetterstedt**) Palaearctic-East Beringian

Distribution: Alaska (Tanana Valley), Yukon; Europe, Urals, Korea, Japan.

Yukon records: Rampart House (CNCI).

Biological information: Larval biology unknown.

Taxonomic notes: *P.s. socculata* is replaced by the subspecies *connexa* (Stein) farther south in North America (from the Terrace district of British Columbia to Nova Scotia and Georgia).

27. *Eutrichota tunicata* (**Zetterstedt**) Holarctic including Beringian

Distribution: Alaska (North Coast, Nome, Alaska Range), Yukon, Canadian Arctic from Ellesmere Island south to Churchill (Manitoba) and Port Harrison (Quebec), North and Northeast Greenland (Peary Land south to 73°35'N); northern Scandinavia, arctic Russia (including Novaya Zemlya).

Yukon records: Herschel Is. (CNCI, SMDV); Firth R. (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); LaForce L. 62°32'N 132°22'W at 1676 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 12 June–29 July.

28. *Eutrichota labradorensis* (**Malloch**) Holarctic including Beringian

Distribution: Alaska (Nome, Unalakleet, Aleutians, Naknek, Alaska Range), Yukon, boreal Canada from central Alberta and Northwest Territories (Salmita Mines) to northern Quebec and Labrador, marginally penetrating low arctic zone at Churchill (Manitoba) and in northern Quebec and Labrador, mountains of British Columbia, Alberta, Maine and New Hampshire; Sweden, Mongolia, northeastern China, Japan (Hokkaidô).

Yukon records: Dempster Hwy. km 155 (950 m) and km 140 (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI); S end Kluane L. (CASC); Loon L. 60°02'N 127°35'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 20 June–8 August.

29. *Eutrichota partita* (Huckett)

Holarctic including Beringian

Distribution: Yukon, mountains of southern British Columbia and Alberta south to Washington (Mt. Rainier), Wyoming (Yellowstone) and Colorado (mainly in subalpine zone); Italian Alps, Mongolia.

Yukon records: km 140 Dempster Hwy. (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 8–12 July.

30. *Eutrichota woodi* Griffiths (Frontispiece)

Beringian

Distribution: Yukon.

Yukon records: North Fork Pass km 82 Dempster Hwy. (CNCI); km 155 and 159 Dempster Hwy. (CNCI); Richardson Mts. 66°07'N 136°30'W (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 4 June–8 August, on open slopes above treeline (850–1400 m).

31. *Eutrichota triticiperda* (Stein)

Holarctic including Beringian

Distribution: Alaska (Cape Thompson, Teller, Naknek, Alaska Range), Yukon, low arctic Northwest Territories from Mackenzie Delta and Tuktoyaktuk Peninsula to Chesterfield and Churchill (Manitoba), Atlin at 1463 m (British Columbia), subalpine to alpine zones of mountains of southern British Columbia and Alberta; central Europe, Kirgizstan, western China.

Yukon records: Firth R. (CNCI); km 140 Dempster Hwy. (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI, SMDV); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); LaForce L. 62°32'N 132°22'W at 1676 m (CNCI); Nines Cr. 61°11'N 139°42'W at 1676–1980 m (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 11 June–5 July.

32. *Eutrichota parafacialis* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (Katmai and Chugach Range), Yukon, south at high elevation (mainly in alpine zone) to the Alberta Rockies (Highwood Pass), southern British Columbia and Mt. Baker (Washington).

Yukon records: North Fork Pass km 82 Dempster Hwy. (CNCI); Dickson L. on Mt. Mye 62°21'N 133°08'W at 1524 m (CNCI); Dezadeash L. (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 29 May–21 June.

33. *Eutrichota setosa* (Stein)

Nearctic including East Beringian

Distribution: Alaska (Katmai), Yukon, south in mountains to Oregon, Idaho and Alberta.

Yukon records: Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI); 18 km N Stewart Crossing (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 2–12 June.

34. *Eutrichota frigida* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (Unalakleet, Naknek), Yukon, widely in boreal Canada from central Alberta and Northwest Territories (Salmita Mines) to Labrador and New Brunswick, south in mountains from Terrace district (British Columbia) to northernmost California and from Maine to the Great Smoky Mountains (North Carolina and Tennessee); northern and central Europe, Japan, Kamchatka.

Yukon records: Mason Hill 67°19'N 137°40'W (SMDV); km 140.5 Dempster Hwy. at 900 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 18 June–4 July.

35. *Eutrichota longimana* (Pokorný)

Holarctic including Beringian

Distribution: Alaska (Umiat, Nome, Naknek), Yukon, central Alberta, northern Quebec (Bonne Esperance), mountains of Oregon and California (1200–2620 m); northern and central Europe, northeastern China, Japan.

Yukon records: Rampart House (CNCI); km 465 Dempster Hwy. at 800 m (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 5 July–8 August.

36. *Eutrichota lipsia* (Walker)

Nearctic excluding East Beringian

Distribution: West of the Rocky Mountains known only from Yukon and certain districts of British Columbia (especially Terrace), widespread east of the Rockies from central Alberta, northern Ontario and New Brunswick south to Georgia, Alabama and Kansas (Fig. 4).

Yukon records: Strawberry Cr. 60°05'N 132°20'W (SMDV).

Biological information: Probably breeds in groundhog burrows. An abundant species where it occurs, so the fact that it was not collected in the Yukon prior to 1981 may indicate recent spread. Adult collected in Yukon 6 August 1981.

37. *Eutrichota tarsata* (Wulp)

Nearctic including East Beringian

Distribution: Alaska and Yukon south to mountains of California and Arizona, east to Nova Scotia and Pennsylvania (Fig. 3).

Yukon records: km 140 Dempster Hwy. (CNCI); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); Ross L. 61°35'N 133°05'W (SMDV); Duke R. Meadow; Haines Jct. (SMDV); Wolf Cr. km 1458 Alaska Hwy. (CASC); Marsh L. km 1432 Alaska Hwy. (CNCI).

Biological information: Closely related to *E. lipsia* (Walker), so the larvae are expected to live in rodent burrows. Adults collected in Yukon 2 July–8 August.

38. *Pegoplata nigroscutellata* (Stein)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, widely in boreal Canada and northeastern United States (British Columbia and Mackenzie Delta to Labrador, Newfoundland and Maryland), south along Pacific coast and in mountains to northern California, South Dakota, Great Smoky Mountains (Tennessee and North Carolina); Europe, northwestern and northeastern China, Korea, Japan.

Yukon records: Rampart House (CNCI); Old Crow (SMDV); 6 km E Old Crow (SMDV); Bluefish Caves 67°08'N 140°48'W at 610 m (SMDV); km 416 Dempster Hwy. at 750 m (CNCI); Eagle R. km 382 Dempster Hwy. (SMDV); km 140–141 Dempster Hwy. (CNCI, SMDV); North Fork Pass km 83 Dempster Hwy. (SMDV); North Fork Crossing km 68–69 Dempster Hwy. at 1070 m (CNCI); 22.5 km E Dawson (CNCI); 3 km N Orchie L. 62°11'N 131°48'W (SMDV); Snag (CASC, SMDV); Lake Cr. 61°48'N 140°02'W (SMDV); White R. km 1881 Alaska Hwy. (SMDV); Quiet L. (SMDV).

Biological information: Attracted to moose dung, a probable larval feeding site. Adults collected in Yukon 6 June–5 August.

39. *Pegoplata tundrica* (Schnabl)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, low arctic Canada from Mackenzie Delta to southern Baffin Island and Labrador, Newfoundland, subalpine to alpine zones of Rocky Mountains from Alberta and Yoho National Park (British Columbia) south to Colorado; West Greenland (Søndrestrom); Fennoscandia, arctic Russia (Karskaya Tundra), islands in Okhotsk and Bering Seas.

Yukon records: Fish Cr. 69°27'N 140°23'W (SMDV); Firth R. (CNCI); Richardson Mts. 136°47'W at 914 m (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250–1310 m (CNCI); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); 58 km W Dawson (CNCI).

Biological information: Larvae are expected to be dung-feeders, like those of closely related species. Adults collected in Yukon 11 June–13 July.

40. *Pegoplata patellans* (Pandellé)

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, forested areas (both coastal and in mountains) from Terrace district (British Columbia) south to Montana, Idaho and northernmost California, east of the Rockies in central Alberta and Saskatchewan, disjunct on Mt. Katahdin (Maine); Europe, northwestern China.

Yukon records: North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); Snag (CNCI); S end Kluane L. (CASC); Wolf Cr. km 1458 Alaska Hwy. (CASC).

Biological information: Attracted to moose dung, which is expected to be the larval feeding site. Adults collected in Yukon 2 July–6 August.

41. *Myopina scoparia* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (North and South Coasts, Alaska Range), Yukon, Chesterfield (Northwest Territories), Baffin Island, northern Quebec (Port Harrison and Indian House L.); Fennoscandia.

Yukon records: Firth R. (CNCI); 6 km E Old Crow (SMDV); Dragon L. 62°33'N 131°20'W (SMDV); Big Cr. 60°09'N 129°42'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 11 June–20 July.

42. *Myopina crassipalpis* Ringdahl

Holarctic including Beringian

Distribution: Umiat (Alaska), Yukon, Salmita Mines (Northwest Territories), Victoria Island at 71°17'N 114°W, Baffin Island (Cyde); Sweden (Vällista Mts.).

Yukon records: North Fork Pass km 82 Dempster Hwy. at 1250–1310 m (CNCI); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 12 June–6 July.

43. ***Paradelia lundbeckii* (Ringdahl)** Holarctic including Beringian
Distribution: Yukon, Dubawnt L. (Northwest Territories), Payne Bay (northern Quebec); northern Sweden.
Yukon records: Herschel Is. (SMDV); Blackstone R. km 89.5 Dempster Hwy. (SMDV).
Biological information: Larval biology unknown. Adults collected in Yukon 28 June–21 July.
44. ***Paradelia palpata* (Stein)** Holarctic including Beringian
Distribution: Alaska (Mt. McKinley National Park), Yukon, boreal North America from Norman Wells (Mackenzie Valley) and central Alberta to Ontario, Michigan and Vermont, mountains of Wyoming (Teton County) and Colorado (Independence Pass at treeline, 3500 m); northern Europe.
Yukon records: Rampart House (CNCI).
Biological information: Larval biology unknown.
45. ***Paradelia trigonaloides* Griffiths** Beringian
Distribution: Yukon.
Yukon records: North Fork Pass km 82 Dempster Hwy. at 1300 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 25 June–21 July.
46. ***Paradelia ogilviensis* Griffiths** Beringian
Distribution: Alaska (Igloo Cr. in Mt. McKinley National Park), Yukon.
Yukon records: km 155 Dempster Hwy. at 950 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 11–12 July.
47. ***Paradelia abbreviata* (Pokorny)** Holarctic including Beringian
Distribution: Alaska (Alaska Range), Yukon, alpine zone of Banff National Park (Alberta); Italian Alps.
Yukon records: km 155 Dempster Hwy. at 950 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 29 June–3 July.
48. ***Paradelia helleni* (Ringdahl)** Holarctic including Beringian
Distribution: Yukon, Bathurst Inlet (Northwest Territories), subalpine to alpine zones of Alberta and Colorado Rockies; northern Fennoscandia.
Yukon records: Herschel Is. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 1–21 July.
49. ***Paradelia intersecta* (Meigen)** Holarctic including Beringian
Distribution: Yukon, Northwest Territories more or less to treeline, Churchill (Manitoba), central Alberta, western mountains from Alberta and southern British Columbia to southern California, Utah and Colorado (mainly in subalpine zone); Europe, northern and northeastern China.
Yukon records: Hunker Cr. near Dawson at 914 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon on 3 July.
50. ***Paradelia arctica* (Ringdahl)** Holarctic including Beringian
Distribution: Arctic Canada from Ellesmere Island, south more or less to treeline in Yukon, Northwest Territories and northern Quebec, Alaska (North Coast and Pribilofs), Greenland (widespread); northern Sweden.
Yukon records: Firth R. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon on 13 July.
51. ***Alliopsis glacialis* (Zetterstedt)** Palaearctic-East Beringian
Distribution: Alaska (North Slope and Skagway), Yukon; northern and central Europe, Novaya Zemlya and Polar Ural (Fig. 2).
Yukon records: Herschel Is. (CNCI); Firth R. (CNCI); Fish Cr. 69°27'N 140°19'W (SMDV); Richardson Mts. 66°06'–68°20'N 136°28'–137°20'W at 610–1006 m (CNCI); km 465 Dempster Hwy. at 800 m (CNCI); km 155 Dempster Hwy. at 1520–1830 m (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI); 17 km WNW Burwash Flats at 1600–1830 m (CNCI); 10 km S Carcross at 1830 m (CNCI).
Biological information: Larval biology unknown. Adults predators of chironomids, collected in Yukon 17 June–8 August.

- 52. *Alliopsis obesa* Malloch** Holarctic including Beringian
Distribution: Alaska (Brooks Range), Yukon, arctic lowlands of Canada from Churchill (Manitoba) and Sugluk (northern Quebec) north to Banks Island, Victoria Island and Clyde on northern Baffin Island; northern Sweden.
Yukon records: Firth R. (CNCI); Rampart House (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 19 May–7 August.
- 53. *Alliopsis attenuata* Griffiths** Nearctic including East Beringian
Distribution: Yukon, Kananaskis Valley (Alberta) in montane zone (probably 1400–1500 m).
Yukon records: North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI, SMDV).
Biological information: Larval biology unknown. Adults collected in Yukon 11 June–4 July.
- 54. *Alliopsis silvestris* (Fallén)** Holarctic including Beringian
Distribution: Alaska (widespread), Yukon, throughout British Columbia and boreal Canada from about treeline southward, in Rocky Mountains of western United States from Idaho and Montana south to Arizona and New Mexico, South Dakota (Black Hills), northeastern United States south to Pennsylvania; throughout boreal Palaearctic region.
Yukon records: Sheep Cr. 69°10'N 140°18'W (SMDV); Rampart House (CNCI); Old Crow (SMDV); 6 km E Old Crow (SMDV); Mason Hill 67°19'N 137°40'W (SMDV); Richardson Mts. 66°40'N 136°18'W at 914 m (SMDV); Wright Pass on Dempster Hwy. (SMDV); km 465 Dempster Hwy. (CNCI); km 416 Dempster Hwy. (CNCI); Dempster Hwy. km 140 and 144 (CNCI, SMDV); Snag (CNCI); Dry Cr. near Snag (CNCI); km 128 Nahanni Range Rd. (SMDV); LaForce L. 62°41'N 132°20'W at 1006 m (CNCI); Pine L. km 1626 Alaska Hwy. (SMDV); Whitehorse (CNCI); Wolf Cr. km 1458 Alaska Hwy. (CASC, SMDV); Morley R. km 1250 Alaska Hwy. (CASC); 7 km E Rancheria (SMDV); Watson L. (CNCI).
Biological information: Larval biology unknown; adults are predators of small flies, especially chironomids; collected in Yukon 27 June–5 August.
- 55. *Alliopsis teriolensis* (Pokorný)** Palaearctic-East Beringian
Distribution: Yukon; northern and central Europe.
Yukon records: North Fork Pass km 82 Dempster Hwy. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 18–27 July.
- 56. *Alliopsis denticauda* (Zetterstedt)** Holarctic including Beringian
Distribution: Yukon, high boreal to low arctic Northwest Territories south to Churchill (Manitoba), Moose Factory (Ontario), Quebec (Mistassini and Thunder R.); Fennoscandia, northeastern China.
Yukon records: km 141 Dempster Hwy. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 22–24 June.
- 57. *Alliopsis constrictor* (Malloch)** Nearctic including East Beringian
Distribution: Alaska (South Coast and Tonsina), Yukon, Northwest Territories (Mackenzie Valley and Delta, Tuktoyaktuk Peninsula, Coppermine), Churchill (Manitoba), mountains of northern British Columbia (Summit L.) and Alberta (Banff National Park).
Yukon records: Rampart House (CNCI); km 141 Dempster Hwy. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 5–28 June.
- 58. *Alliopsis conifrons* (Zetterstedt)** Holarctic including Beringian
Distribution: Central and southern Alaska, Yukon, widely in boreal to low arctic Canada from Mackenzie Delta and Prince Albert (Saskatchewan) to northern Quebec and Labrador, mountains of New Hampshire (above 1000 m), subalpine zone of Rocky Mountains from northern British Columbia to Colorado; Europe, northeastern China.
Yukon records: North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon on 2 July.
- 59. *Alliopsis fractiseta* (Stein)** Holarctic including Beringian
Distribution: Alaska (North Slope and Tanana Valley), Yukon, high boreal to low arctic Canada from Mackenzie Delta and Tuktoyaktuk Peninsula (Northwest Territories) to Labrador, subalpine to alpine zone of mountains of British Columbia and Alberta; Fennoscandia.
Yukon records: LaForce L. 62°41'N 132°20'W at 1006 m (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 29 June–17 July.

60. *Alliopsis albipennis* (Ringdahl) Holarctic including Beringian
Distribution: Alaska (North Coast), arctic lowlands of Canada from Yukon and Tuktoyaktuk Peninsula to Churchill (Manitoba), including Banks, Victoria and southern Baffin Island; Fennoscandia.
Yukon records: Herschel Is. (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 9–14 July.
61. *Alliopsis laminata* (Zetterstedt) Palaeartic-East Beringian
Distribution: Yukon; Swedish Lapland.
Yukon records: North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon on 6 July.
62. *Alliopsis sepiella* (Zetterstedt) Holarctic including Beringian
Distribution: South Alaska (Talkeetna Mts.), Yukon, Banff National Park (Alberta), Tuktoyaktuk Peninsula (Northwest Territories); Europe, Iceland, northwestern China.
Yukon records: Dawson; Marshall Cr.
Biological information: Larval biology unknown.
63. *Alliopsis arnaudi* Griffiths Nearctic including East Beringian
Distribution: Yukon, Purcell Mountains (British Columbia).
Yukon records: North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon 4–5 July.
64. *Alliopsis aldrichi* (Ringdahl) Palaeartic-East Beringian
Distribution: Yukon; Sweden, China.
Yukon records: Sheldon L. 62°56'N 131°10'W at 1070 m (CNCI).
Biological information: Larval biology unknown. Adults collected in Yukon on 3 July.
65. *Alliopsis gentilis* (Huckett) Nearctic excluding East Beringia
Distribution: Yukon; Colorado (Tennessee Pass at 3120 m).
Yukon records: Wolf Cr. km 1458 Alaska Hwy. (CASC).
Biological information: Larval biology unknown. Adults collected in Yukon 2 July.
66. *Alliopsis longipennis* (Ringdahl) Holarctic including Beringian
Distribution: Alaska (Umiat, Nome, Naknek, Anchorage), Yukon, widely in boreal and low arctic Canada from Mackenzie Delta and central Alberta to southern Manitoba (Whitewater L.), northern Quebec and Labrador, mountains of northern British Columbia (Summit L. Pass at 1280 m) and Alberta (Turner Valley); Fennoscandia.
Yukon records: km 465 Dempster Hwy. at 800 m (CNCI); km 1863 Alaska Hwy. (SMDV); 18 km NW Donjek R. on Alaska Hwy. (SMDV); Kluane Hills km 1696 Alaska Hwy. (SMDV); LaForce L. 62°41'N 132°20'W at 1006 m (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Quiet L. (SMDV); Kusawa L. Rd. 60°46'N 136°03'W (SMDV).
Biological information: Larval biology unknown. Adults collected in Yukon 31 May–8 July.
67. *Alliopsis dentiventris* (Ringdahl) Holarctic including Beringian
Distribution: Alaska (Naknek), Yukon, boreal Canada from Mackenzie Delta and central Alberta to Churchill (Manitoba) and Chatterton (Ontario), Alberta Rockies (Kananaskis Valley); northern and central Europe, Urals.
Yukon records: 18 km NW Donjek R. on Alaska Hwy. (SMDV).
Biological information: Larvae are predators of *Dytiscus* larvae (Coleoptera), on which oviposition occurs when the latter leave the water to seek a pupation site. Adults collected in Yukon 23 June.
68. *Alliopsis pilularis* (Stein) Holarctic including Beringian
Distribution: Yukon, Idaho (Gold Hill in Latah County), Montana (Glacier Park Station at 1460 m); records for Maine and Vermont doubtful; northern and central Europe, northwestern China, Japan.
Yukon records: Firth R.
Biological information: Larval biology unknown. Adults collected in Yukon on 3 August.
69. *Alliopsis benanderi* (Ringdahl) Palaeartic-East Beringian
Distribution: Alaska (Steese Hwy. mile 49), Yukon; Fennoscandia.
Yukon records: Rampart House (CNCI), Squanga L. km 1366 Alaska Hwy. (CASC).

Biological information: Larval biology unknown. Adults collected in Yukon 2–12 July.

70. *Delia notobata* Griffiths

Beringian

Distribution: Yukon.

Yukon records: Bluefish Ridge 67°09'N 140°37'W at 793 m (SMDV); km 465 Dempster Hwy. at 800 m (CNCI).

Biological information: The habitat at Bluefish Ridge is ridgetop tundra on weathered limestone. This species is closely related to the cabbage maggot, *D. radicum* (L.), so the larvae are expected to feed on roots of crucifers. Adults collected in Yukon 2–7 July.

71. *Delia planipalpis* (Stein)

Holarctic including Beringian

Distribution: South Alaska, Yukon, widely in western North America (most easterly record Kapuskasing, Ontario) from Mackenzie Delta and Churchill (Manitoba) south to central California, also disjunctly in the Mexican Highlands; widely in Europe and northeast Asia (including Japan).

Yukon records: Firth R. (CNCI); Snag (CNCI); Klukshu Cr.

Biological information: Larvae feed on roots of Cruciferae. This species is a well-known pest of cultivated radishes and brassicae further south; not yet bred in the Yukon, but wild hosts are expected since the species is certainly native. Adults collected in Yukon 14–24 July, which suggests that Yukon populations are univoltine.

72. *Delia floralis* (Fallén)

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, across Canada from British Columbia and Mackenzie Delta to Labrador more or less from the United States border to treeline; throughout northern Eurasia from Europe to Yakutia, Sakhalin and Kamchatka.

Yukon records: Rampart House (CNCI); Dawson (CNCI); km 190 Haines Hwy.

Biological information: Larvae feed on roots of Cruciferae. This is the most serious pest of cultivated brassicae in many northern districts. Its status as a pest in the Yukon is unclarified. According to Alaskan data, it is to be expected both as a garden pest and as a member of the native fauna. Adults collected in Yukon 19 June–14 July.

73. *Delia coronariae* (Hendel)

Palaeartic-East Beringian

Distribution: Yukon; northern and central Europe, Mongolia, northeastern China.

Yukon records: km 140 Dempster Hwy. (CNCI).

Biological information: Larvae are leaf-miners on *Lychnis flos-cuculi* L. (Caryophyllaceae) in Europe; to be expected on closely related plants in Yukon. Adults collected in Yukon 27–30 June.

74. *Delia linearis* (Stein)

Holarctic including Beringian

Distribution: Alaska (Unalakleet, central and southern), Yukon, throughout boreal Canada and northeastern United States from Fort McPherson (Northwest Territories) and Churchill (Manitoba) south to southern Alberta and Minnesota and east to Nova Scotia and Pennsylvania, western mountains from northern British Columbia to Colorado; Europe, northern China, Japan, Kuriles.

Yukon records: Rampart House (CNCI); 6 km E Old Crow (SMDV); North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Dawson (CNCI); 21 km E Dawson (CNCI); Snag (CNCI); Minto Landing (CASC); Snafu Cr. 60°08'N 133°48'W (SMDV).

Biological information: Larvae are expected to feed on Caryophyllaceae, like those of closely related species. Adults collected in Yukon 10 June–24 July.

75. *Delia echinata* (Séguy)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, widely in western Cordillera (over wide elevational range) from northern British Columbia to Utah and southernmost California, Fort Liard (Northwest Territories), central Alberta, shores of Hudson Bay (Churchill, Moose Factory), widely in eastern North America from Newfoundland to the end of the Appalachian chain in Georgia (Rabun Bald); West and East Greenland (to 71°N); throughout Palaeartic region (including Iceland, Canary Islands, Palestine and Indian Himachal Pradesh).

Yukon records: N Driftwood R. 67°56'N 138°15'W (SMDV); km 105 Dempster Hwy. (SMDV); North Fork Pass km 78–83 Dempster Hwy. at 1250 m (CNCI, SMDV); North Fork Crossing at 1070 m (CNCI); Dawson (CNCI); Dragon L. 62°33'N 131°20'W (SMDV); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Dickson L. on Mt. Mye 62°21'N 133°08'W at 1524 m (CNCI); Wolf Cr. near Whitehorse (SMDV); 17 km N Tuchitna R. 61°03'N 129°25'W (SMDV); 7 km E Rancheria (SMDV).

Biological information: Larvae are leaf-miners on various Caryophyllaceae and Chenopodiaceae. Adults collected in Yukon 11 June–5 August.

76. *Delia pseudechinata* Griffiths

Nearctic including East Beringian

Distribution: Yukon, Colorado Rockies (Chaffee County at 3200 m).

Yukon records: North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Wolf Cr. near Whitehorse (SMDV).

Biological information: This species is closely related to *D. echinata* (Séguy), so the larvae are expected to feed on Caryophyllaceae. Adults collected in Yukon 24–27 June.

77. *Delia nuda* (Strobl)

Holarctic including Beringian

Distribution: Alaska (Unalakleet and Cape Thompson), Yukon, Mackenzie Delta and Chesterfield (Northwest Territories), Colorado (Mt. Evans at 4270 m); northern and central Europe (low arctic-alpine).

Yukon records: Herschel Is. (CNCI); km 465 Dempster Hwy. at 800 m (CNCI).

Biological information: Larvae are expected to feed on Caryophyllaceae, like those of closely related species. Adults collected in Yukon 5–28 July.

78. *Delia polaris* Griffiths

Nearctic including East Beringian

Distribution: Alaskan North Slope, Yukon, widely in Canadian Arctic from Padlei (north of Churchill) to Ellesmere Island, high alpine zone of Alberta and Colorado Rockies.

Yukon records: Herschel Is. (CNCI); Firth R. (CNCI, USNM); Richardson Mts. 66°08'N 135°44'W at 790 m (CNCI); km 155 Dempster Hwy. at 1520 m (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI).

Biological information: Associated with *Melandrium* spp. (Caryophyllaceae), which are expected to be the larval hosts. Adults collected in Yukon 17 June–3 August.

79. *Delia longicauda* (Strobl)

Holarctic including Beringian

Distribution: Alaska (widespread), widely in boreal and low arctic Canada north to Tuktoyaktuk Peninsula and Baffin Island (Iqaluit), western mountains south to southern California and New Mexico (mainly in subalpine zone), northeastern United States south to Maryland; Europe, China, Mongolia.

Yukon records: Firth R. (CNCI); Erebia Cr. 67°57'N 136°26'W (SMDV); Rampart House; Old Crow (SMDV); 6 km E Old Crow (SMDV); Dempster Hwy. km 165 (SMDV); km 134 at 1000 m (CNCI); km 128 (SMDV) and km 105 (SMDV); North Fork Pass km 82 Dempster Hwy. at 1250–1310 m (CNCI); North Fork Crossing at 1070 m (CNCI); km 176.4 South Canol Rd. (SMDV); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Marshall Cr.

Biological information: Larval biology unknown. Adults collected in Yukon 17 June–19 July.

80. *Delia inconspicua* (Huckett)

Holarctic including Beringian

Distribution: Alaska (Anchorage), Yukon, boreal North America from central Alberta to northern Quebec south to Iowa and Pennsylvania, mountains of southern Alberta (Banff National Park, Cypress Hills); Siberia.

Yukon records: Carcross Dunes (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 16–18 June.

81. *Delia dovreensis* Ringdahl

Holarctic including Beringian

Distribution: Alaska (Unalakleet), Yukon, Mackenzie Valley (Norman Wells) and northern British Columbia south to Banff National Park at 1980 m (Alberta), disjunct race in Mexico State at 2710–3080 m; Norway, Mongolia.

Yukon records: 6 km E Old Crow (SMDV); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Lake Cr. 61°48'N 140°02'W (SMDV); Lone Tree Cr. 60°17'N 132°58'W (SMDV); Takhanne R. 60°07'N 136°56'W (SMDV); Carcross Dunes (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 3 June–8 July.

82. *Delia bucculenta* (Coquillett)

Holarctic including Beringian

Distribution: Alaska (widespread), throughout Canada in low arctic, boreal and prairie zones, south in northeastern United States to Illinois and New York, in western Cordillera (coast and mountains) south to southern California and Utah; Siberia.

Yukon records: 6 km E Old Crow (SMDV); Dempster Hwy. km 141, 105 and 89.5 (CNCI, SMDV); North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing km 68–69 Dempster Hwy. at

1070 m (CNCI); Dawson (CNCI); Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI); Lapie R. 61°59'N 132°35'W (SMDV); Ross R. 61°56'N 132°30'W at 914 m (CNCI); Rose L. 61°35'N 133°05'W (SMDV); 18 km NW Donjek R. 61°44'N 139°54'W (SMDV); Whitehorse (CNCI); Tagish (SMDV); 10 km N Carcross (SMDV); Judas Cr. 60°23'N 134°08'W (SMDV); Takhanne R. 60°07'N 136°56'W (SMDV); Lone Tree Cr. 60°17'N 132°58'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 29 May–28 July.

83. *Delia schistophalla* Griffiths

Nearctic including East Beringian

Distribution: Yukon, Mackenzie Delta, alpine zone of mountains of northern British Columbia (Summit L. Pass) and Alberta (Banff National Park and Highwood Pass).

Yukon records: Mt. Gibben 64°42'N 139°08'W at 1310 m (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 13 July.

84. *Delia mutans* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (Anchorage and Palmer), Yukon, Mackenzie Delta and Valley, mountains of southern British Columbia and Alberta south to Washington and Colorado, with range extension in northern prairie zone to North Dakota (Richland County).

Yukon records: Kluane (SMDV).

Biological information: This is an early spring species of unknown larval biology, collected in Yukon 4 June.

85. *Delia integralis* (Huckett)

Nearctic including East Beringian

Distribution: Low arctic (mainly coastal) localities from Cape Thompson (Alaska) to Baffin Island and Labrador.

Yukon records: Herschel Is. (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 22 June–28 July.

86. *Delia nigripennis* Griffiths

Nearctic including East Beringian

Distribution: Alaska (Alaska Range), Yukon, mountains of British Columbia and Alberta south to Mt. Rainier (Washington) and Colorado (mainly in alpine zone).

Yukon records: North Fork Pass km 82 Dempster Hwy. at 1070–1310 m (CNCI, SMDV); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 17 June–22 July.

87. *Delia xanthobasis* (Huckett)

Holarctic including Beringian

Distribution: Yukon, Northwest Territories (Tuktoyaktuk Peninsula, Granet L. 68°42'N 125°37'W), arctic Quebec (Payne Bay); Swedish Lapland.

Yukon records: Firth R. (CNCI); Erebia Cr. 67°58'N 136°29'W at 790 m (SMDV); Richardson Mts. 66°02'N 136°47'W at 915 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 1 July–2 August.

88. *Delia uniseriata* (Stein)

Holarctic including Beringian

Distribution: Alaska (Fairbanks), Yukon, Northwest Territories more or less to treeline, northern Quebec (Mistassini), western mountains from northern British Columbia and Alberta south to California and Colorado (mainly in montane to subalpine zones); northern and central Europe, China, Siberia.

Yukon records: Rampart House (CNCI); km 141 Dempster Hwy. (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing km 68–69 Dempster Hwy. at 1070 m (CNCI); 21 km E Dawson (CNCI); Dragon L. 62°33'N 131°20'W (SMDV); Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 11 June–7 July.

89. *Delia tarsata* (Ringdahl)

Holarctic including Beringian

Distribution: Alaska (widespread), boreal to low arctic Canada from Yukon, Mackenzie Delta, northern British Columbia and central Alberta to Labrador, mountains of Maine and New Hampshire, in Rocky Mountains (montane to subalpine zones) from British Columbia and Alberta south to Colorado; Sweden, Siberia, Mongolia.

Yukon records: Rampart House (CNCI); 6 km E Old Crow (SMDV); Dempster Hwy. km 382 and 141 (SMDV); Elephant Rock on Ogilvie R. (SMDV); Dawson (CNCI); 21 km E Dawson (CNCI); Ross R. 61°56'N 132°30'W at 914 m (CNCI); Lake Cr. 61°48'N 140°02'W (SMDV); Haines Jct. (SMDV);

Marshall Cr.; Takhini Hot Springs (SMDV); Kusawa Lake Rd. 60°46'N 136°03'W (SMDV); Chilkat Pass on British Columbia border at 975 m (CNCI); Judas Cr. 60°23'N 134°08'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 10 June–10 July.

90. *Delia lineariventris* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, boreal Canada from Mackenzie Delta and central Alberta to Labrador (more or less to treeline), Maine (Mt. Katahdin), mountains of British Columbia and Alberta south in Rockies to Colorado (mainly in montane to subalpine zones); northern and central Europe, China, Japan, Kamchatka.

Yukon records: Firth R. (CNCI); Rampart House (CNCI); 6 km E Old Crow (SMDV); Trout L. 68°50'N 138°45'W (SMDV); Dempster Hwy. km 465 at 800 m (CNCI), km 382 (SMDV) and km 141 (SMDV); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI); North Fork Crossing km 68–69 Dempster Hwy. at 1070 m (CNCI); 21 km E Dawson at 400 m (CNCI); Dawson (CNCI); 46 km W Dawson at 1070 m (SMDV); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); LaForce L. 62°41'N 132°20'W at 1006 m (CNCI); Dragon L. 62°33'N 131°20'W (SMDV); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI); 3 km N Orchie L. 62°11'N 131°48'W (SMDV); km 1839 Alaska Hwy.; Klukshu; Wolf Cr. near Whitehorse (CASC); Teslin L.; Watson L.

Biological information: Larval biology unknown. Adults collected in Yukon 11 June–21 July.

91. *Delia repleta* (Huckett)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, high boreal to low arctic Northwest Territories south to Churchill (Manitoba), Atlin at 670 m (northern British Columbia), Alberta Rockies; European Russia.

Yukon records: Firth R. (CNCI, SMDV); 6 km E Old Crow (SMDV); Old Crow (SMDV); Dempster Hwy. km 141, 118 and 89.5 (SMDV); North Fork Pass km 82 Dempster Hwy. at 1250 m (CNCI); North Fork Crossing km 68–69 Dempster Hwy. at 1070 m (CNCI); Dawson (CNCI); LaForce L. 62°41'N 132°20'W at 915 m (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Dickson L. on Mt. Mye 62°21'N 133°08'W at 1524 m (CNCI); Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI); Swim Lks. 62°13'N 133°W at 975 m (CNCI); Snag (SMDV); 18 km NW Donjek R. 61°44'N 139°53'W (SMDV); Indian Cr. 60°23'N 134°08'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 8 June–21 July.

92. *Delia cupricrus* (Walker)

Nearctic including East Beringian

Distribution: Alaska (Tanana Valley, Unalakleet, Anchorage), Yukon, widespread in boreal areas from Fort Simpson in the Mackenzie Valley to Newfoundland and New York, south in the western mountains to Colorado, Utah and Nevada.

Yukon records: Dawson.

Biological information: Larval biology unknown.

93. *Delia angustaeformis* (Ringdahl)

Palaeartic-East Beringian

Distribution: Yukon, Atlin (British Columbia); Fennoscandia, Mongolia.

Yukon records: Takhini Hot Springs (CNCI); Whitehorse (CNCI).

Biological information: *D. angustaeformis* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 11–20 August.

94. *Delia megatricha* (Kertész)

Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, boreal Canada from Mackenzie Delta, northeastern British Columbia and central Alberta to southwestern Manitoba, in montane zone of mountains from northern British Columbia and Alberta south to New Mexico and Arizona; central and eastern Europe, Siberia, China.

Yukon records: Firth R. (CNCI); Rampart House (CNCI); Dawson (CNCI); 22.5 km E Dawson (CNCI); 9 km S Ross R. 61°54'N 132°25' (SMDV); Burwash Landing, Haines Jct. (SMDV); Takhini Hot Springs (CNCI); Whitehorse (CNCI, USNM); Wolf Cr. near Whitehorse (CASC, SMDV); Teslin (CNCI); Carcross Dunes (SMDV).

Biological information: Larvae feed in stem bases of the brome grasses *Bromus inermis* Leys. (introduced in Yukon) and the native *B. pumpellianus* Scribn. which is common on dry slopes in the Yukon over a wide elevational range. Adults collected in Yukon 27 June–24 August.

95. *Delia aniseta* (Stein)

Nearctic including East Beringian

Distribution: Alaska (Mt. McKinley National Park), Yukon, widespread in boreal and northern prairie areas of western Canada from Mackenzie Valley and Yellowknife (Northwest Territories) to southern

Manitoba, in the western mountains from northern British Columbia south to Arizona and Colorado, apparently disjunct in New Brunswick and Nova Scotia.

Yukon records: Richardson Mts. 66°37'N 136°20'W (SMDV); 22.5 km E Dawson (CNCI); Dawson (CNCI); Snag (CNCI); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); Takhini Hot Springs (CNCI, SMDV); Marsh L. km 1432 Alaska Hwy. (CNCI).

Biological information: *D. aniseta* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 31 May–19 August.

96. *Delia tenuiventris* (Zetterstedt)

Holarctic including Beringian

Distribution: Alaska (Unalakleet, central and southern), Yukon, boreal Canada from Mackenzie Valley (Fort Simpson) and central Alberta east to Labrador, Newfoundland and Massachusetts, Terrace district (British Columbia); Fennoscandia, northeast Asia (widespread).

Yukon records: Rampart House (CNCI); 39 km W Dawson at 1100 m (CNCI); Dawson (CNCI); 22.5 km E Dawson at 400 m (CNCI); Gravel L. 93 km E Dawson at 625 m (CNCI); Snag (CASC, CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Swift R., Watson Lake (CASC).

Biological information: *D. tenuiventris* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 17 July–15 August.

97. *Delia nigricaudata* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (Alaska Range), Yukon, mountains and foothills of British Columbia and Alberta south to Washington and Colorado (mainly in montane zone), disjunctly in Mexican Sierra Madre Occidental.

Yukon records: 2 km N Vand Cr. 60°14'N 136°57'W (SMDV).

Biological information: *D. nigricaudata* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 20 July.

98. *Delia aemene* (Walker)

Nearctic including East Beringian

Distribution: Central and southern Alaska, Yukon, very widespread in boreal, prairie and montane areas from the Mackenzie Valley to Labrador and Newfoundland south to New Mexico, Nebraska and Indiana.

Yukon records: Rampart House (CNCI); Dawson (CNCI); 22.5 km E Dawson (CNCI); Snag (CASC, CNCI); Minto Landing (CASC); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); Haines Jct. (SMDV); Canyon on Aishihik R. (SMDV); Takhini Hot Springs (CASC); Whitehorse (CNCI); Tagish (SMDV).

Biological information: *D. aemene* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 4 July–20 August.

99. *Delia abruptiseta* (Ringdahl)

Palaeartic-East Beringian

Distribution: Alaska (North Slope and Alaska Range), Yukon; Swedish Lapland.

Yukon records: Herschel Is. (CNCI, SMDV); Firth R. (CNCI); Richardson Mts. 66°25'N 135°58'W at 914 m (CNCI); km 159 Dempster Hwy. at 1400 m (CNCI); 14 km WSW Burwash Flats at 1600 m (CNCI).

Biological information: *D. abruptiseta* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 28 June–30 July.

100. *Delia cuneata* Tiensuu

Holarctic including Beringian

Distribution: Alaska (Unalakleet, central and southern), Yukon, boreal Canada from Mackenzie Valley (Fort Simpson), northeastern British Columbia and central Alberta east to Moosonee (Ontario), mountains of northern British Columbia, Alberta, Utah and Colorado (mainly in montane zone); Finland, China, Sakhalin.

Yukon records: Rampart House (CNCI); 6 km E Old Crow (SMDV); Dawson (CNCI); 21 and 22.5 km E Dawson (CNCI); Snag (CNCI); Pelly Crossing (SMDV); Haines Jct. (CNCI); Aishihik R. (SMDV); Takhini Hot Springs (CNCI); 7 km E Rancheria (SMDV).

Biological information: *D. cuneata* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 6 May–19 August.

101. *Delia seriata* (Stein)

Nearctic including East Beringian

Distribution: Central Alaska, western Canada from Yukon, Yellowknife (Northwest Territories) and northern British Columbia to southern Alberta, mountains of western United States (mainly in montane zone) south to Californian Sierra Nevada, Arizona and Colorado.

Yukon records: Dawson (CASC, CNCI, USNM); 21 and 22.5 km E Dawson (CNCI); Gravel L. 93 km E Dawson at 625 m (CNCI); Minto Landing (CASC); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); Snag (CNCI); Lake Cr. 61°48'N 140°02'W (SMDV); S end Kluane L. (SMDV); Haines Jct. (SMDV); Takhanne R. on Haines Hwy. (SMDV); Takhini Hot Springs (CASC, CNCI); Richthofen Cr. 61°08'N 135°21'W (SMDV); Tagish (SMDV).

Biological information: *D. seriata* belongs to the *D. coarctata* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 23 June–19 August.

102. *Delia fabricii* (Holmgren)

Holarctic including Beringian

Distribution: Alaska (Nome, Unalakleet, central and southern), Yukon, Churchill (Manitoba), northern Quebec and Labrador, West Greenland below 70°N; Iceland, northern Europe, Novaya Zemlya, Kamchatka, Japan.

Yukon records: km 140 Dempster Hwy. (CNCI); 21 and 22.5 km E Dawson (CNCI); Burwash Landing (CNCI).

Biological information: Larvae feed in the bases of grass shoots, the preferred host in Norway being *Poa pratensis* L. Adults collected in Yukon 13 June–8 August.

103. *Delia unispina* Yudin

Holarctic including Beringian

Distribution: Alaska (North Slope, central and southern), Yukon, widely in boreal to low arctic Canada from Mackenzie Delta and Banks Island east to northern Quebec, penetrating northern fringes of prairie zone in Alberta and southwestern Manitoba, western mountains from northern British Columbia to southern California and Colorado (mainly in subalpine to alpine zones); Mongolia, Kamchatka.

Yukon records: Firth R. (CNCI); North Fork Pass km 82 Dempster Hwy. at 1310 m (CNCI); Minto Landing (CASC); Dickson L. on Mt. Mye 62°21'N 133°08'W at 1524 m (CNCI); 14 km WSW Burwash Flats at 1600 m (CNCI); Whitehorse.

Biological information: *D. unispina* belongs to the *D. pallipennis* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 14 June–21 July.

104. *Delia gracilipes* (Malloch)

Nearctic including East Beringian

Distribution: Alaska (Lower Tonsina), Yukon, eastern slopes of Rocky Mountains (in montane zone) from central British Columbia to southwestern Montana.

Yukon records: Duke R. Flats near Burwash Landing (SMDV); Horseshoe Bay on Kluane L. (CASC); Bear Cr. near Haines Jct.; Takhini Hot Springs (CASC); Wolf Cr. near Whitehorse (CASC).

Biological information: *D. gracilipes* belongs to the *D. pallipennis* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 2 July–8 August.

105. *Delia garretti* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (widespread), Yukon, western mountains from northern British Columbia and Alberta south to the Californian Sierra Nevada, Utah and Colorado (mainly in montane and subalpine zones), high boreal to low arctic areas of Canada from Mackenzie Valley to Labrador and Newfoundland.

Yukon records: Firth R. (CNCI); Rampart House (CNCI); km 140 Dempster Hwy. (CNCI); Lake Cr. 61°48'N 140°02'W (SMDV); Minto Landing (CASC); Ross R. 61°56'N 132°30'W at 915 m (CNCI); Watson L. (CNCI).

Biological information: *D. garretti* belongs to the *D. pallipennis* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 21 June–8 August.

106. *Delia propinqua* (Huckett)

Nearctic including East Beringian

Distribution: Southern and central Alaska, Yukon, montane and subalpine zones of western mountains from southern British Columbia and Alberta to the Californian Sierra Nevada and Colorado, east of the mountains in central Alberta and Great Bear L. (Northwest Territories), apparently disjunct in Labrador and adjacent Quebec (Bradore Bay).

Yukon records: Minto Landing (CASC); Takhini Hot Springs (CNCI).

Biological information: *D. propinqua* belongs to the *D. pallipennis* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 4 July–19 August.

107. *Delia concorda* (Huckett)

Nearctic excluding East Beringia

Distribution: Widespread farther south in the western Cordillera from southern British Columbia and Alberta to the Californian Sierra Nevada, Utah and Colorado (from low elevation to about treeline), with range extension in northern prairie zone of Alberta, Saskatchewan and Montana, also in the Black

Hills of South Dakota. Range in Yukon and northwestern British Columbia (Ketchum L., Pete L., Atlin) possibly disjunct.

Yukon records: Haines Jct. (SMDV).

Biological information: *D. concordia* belongs to the *D. pallipennis* infrasection, whose known larvae are grass-feeders. Adults collected in Yukon 19 July.

108. *Delia neomexicana* (Malloch) Holarctic including Beringian

Distribution: Central Alaska, Yukon, western Cordillera from northern British Columbia south to southern California and New Mexico (over wide elevational range from desert basins to alpine zone), east of the Rockies at Hay River (Northwest Territories) and in the prairie zone of Alberta and Montana; Siberia.

Yukon records: 22.5 km E Dawson (CNCI); Minto Landing (CASC); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); Horseshoe Bay on Kluane L. (CASC).

Biological information: Bred from winter wheat in Alberta, wild hosts unknown. Adults collected in Yukon 2 July–6 August.

109. *Delia sobriana* (Huckett) Nearctic including East Beringian

Distribution: Montane zone from southern British Columbia and Montana south to central California, Utah and Colorado. Yukon occurrence apparently disjunct.

Yukon records: Duke R. Flats.

Biological information: Larval biology unknown. Adults collected in Yukon 4 July–1 August.

110. *Delia pseudorainieri* Griffiths Nearctic including East Beringian

Distribution: Central Alaska, Yukon, Mackenzie Delta and Valley, Reliance (Northwest Territories), montane to subalpine zones of Rocky Mountains and foothills in northern British Columbia and Alberta, Cypress Hills (Alberta), Manitoba (N Roblin), Utah (Duchesne County).

Yukon records: Rampart House (CNCI); 6 km E Old Crow (SMDV); Bluefish Caves 67°08'N 140°48'W at 610 m (SMDV); Dempster Hwy. km 140 (900 m), km 155 (950 m) and km 159 (1400 m) (CNCI); 22.5 km E Dawson at 400 m (CNCI); 17 km WNW Burwash Flats at 1830 m (CNCI); Kluane (SMDV); Whitehorse (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 5 July–1 September.

111. *Delia extensa* (Huckett) Nearctic including East Beringian

Distribution: Central and southern Alaska (including Aleutians and Panhandle), Yukon, mountains of British Columbia south to Idaho and the Californian Sierra Nevada (mainly in montane zone).

Yukon records: Rampart House (CNCI); km 140 Dempster Hwy. at 900 m (CNCI); Sheldon Pass 62°44'N 131°01'W (SMDV); km 128 Nahanni Range Rd. 61°38'N 128°20'W (SMDV); Haines Jct. (CASC); 2 km N Carcross at 650 m (CNCI); 4 km S Evelyn Cr. 60°45'N 133°05'W (SMDV); Strawberry Cr. 60°05'N 132°20'W (SMDV); Loon L. 60°02'N 127°35'W (SMDV).

Biological information: Larvae feed in stems or roots of *Lupinus* spp. (Leguminosae). Adults collected in Yukon 17 July–7 August.

112. *Delia albula albula* (Fallén) Holarctic including Beringian

Distribution: Pacific Coast from Alaska Panhandle south to northern California, northern Quebec, New Brunswick, Sable Island (Nova Scotia), inland around the Great Lakes, L. Athabasca Dunes (Saskatchewan), Yukon, and Minchumina (Alaska); northern Europe, Mongolia.

Yukon records: Carcross Dunes (CNCI).

Biological information: This species is an obligate dune-dweller whose larvae feed on fungi growing in sand, bred from *Sarcosphaera coronaria* (Jacq. ex Cooke) Boud. (Ascomycetes) on Sable Island. Adults collected in Yukon 16 June–early August.

Taxonomic notes: Subspecies *capito* (Coquillett) occurs on the Atlantic Coast from Maine to New Jersey.

113. *Delia hirtitibia* (Stein) Holarctic including Beringian

Distribution: Alaska (Umiat), Yukon, Northwest Territories (Great Bear L., Wrigley), Churchill (Manitoba), Fort Chimo (Quebec); northern Europe, China.

Yukon records: Firth R. (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Carcross Dunes (CNCI).

Biological information: Found mainly on sand dunes, larval biology unknown. Adults collected in Yukon 16 June–13 July.

114. *Delia dissimilipes* (Huckett)

Beringian

Distribution: Alaska (Cape Thompson), Yukon.*Yukon records*: Firth R. (CNCI).*Biological information*: Larval biology unknown. Adults collected in Yukon 2 August.115. *Delia angustifrons* (Meigen)

Palaeartic-East Beringian

Distribution: Alaska (all coasts south to Prince of Wales Island), Yukon, Northwest Territories (Coppermine); northern Europe.*Yukon records*: Herschel Is. (CNCI).*Biological information*: Larval biology unknown. Confined to coastal sand dunes. Adults collected in Yukon 5–15 July.*Taxonomic note*: *D. angustifrons* is replaced by its sister species *D. hudsonica* Griffiths farther east in North America (the latter known only as a Pleistocene fossil in Yukon).116. *Delia pectinator* Suwa

Holarctic including Beringian

Distribution: Yukon, boreal Canada from Hay River (Northwest Territories) and central Alberta to Labrador, Nova Scotia and Maine, West Coast and mountains from northern British Columbia south to Oregon and Idaho; Japan.*Yukon records*: 6 km E Old Crow (SMDV); 21 and 22.5 km E Dawson (CNCI); 18 km NW Donjek R. 61°44'N 139°54'W (SMDV).*Biological information*: Larval biology unknown. Adults collected in Yukon 23 June–31 July.117. *Delia rondanii* (Ringdahl)

Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, low arctic Canada from Mackenzie Delta to southern Baffin Island and Labrador, alpine zone of Alberta and Colorado Rockies; northern Europe, Mongolia.*Yukon records*: Herschel Is. (CNCI); Firth R. (CNCI); North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Sheldon L. 62°56'N 131°10'W at 1070 m (CNCI); LaForce L. 62°32'N 132°22'W at 1676 m (CNCI); Vangora Cr. 62°15'N 133°15'W at 1070 m (CNCI).*Biological information*: Larval biology unknown. Adults collected in Yukon 12 June–29 July.118. *Delia leptinostylos* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (Isabel and Polychrome Passes in the Alaska Range), Yukon, Alberta (Nordegg, Snow Cr. Pass at 2255 m in Banff National Park), Utah (Aspen Grove).*Yukon records*: Rampart House (CNCI).*Biological information*: Larval biology unknown. Adults collected in Yukon 11–16 July.119. *Delia groenlandica* Griffiths

Nearctic including East Beringian

Distribution: Yukon, northern Quebec (Indian House L.), mountains of Maine and New Hampshire (mainly above 1000 m), subalpine to alpine zones of mountains in southern British Columbia and Alberta, Californian Sierra Nevada (2000–3000 m), Southwest Greenland.*Yukon records*: North Fork Pass at 1250 m (CNCI); 10 km S Carcross at 1830 m (CNCI).*Biological information*: Larval biology unknown. Adults collected in Yukon 20 June–18 July.120. *Delia beringiana* Griffiths

Palaeartic-East Beringian

Distribution: Alaska (Unalakleet), Yukon, Tuktoyaktuk; Mongolia.*Yukon records*: Herschel Is. (CNCI); Wright Pass on Dempster Hwy. (SMDV); Dempster Hwy. km 465 at 800m, km 159 at 1400 m, and km 155 (CNCI).*Biological information*: Larval biology unknown. Adults collected in Yukon 22 June–29 July.121. *Delia deviata* (Huckett)

Nearctic including East Beringian

Distribution: Alaska (widespread), Yukon, northern British Columbia south to southern California and New Mexico (mainly in montane to subalpine zones of mountains, also at low elevation along coast).*Yukon records*: Rampart House (CNCI); 5 km NW Old Crow at 790 m (SMDV); Bluefish Caves 67°08'N 140°48'W at 610 m (SMDV); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); LaForce L. 62°41'N 132°20'W at 1005 m (CNCI); Swim Lks. 62°13'N 133°W at 975 m (CNCI); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); Ross R. 61°56'N 132°30'W at 914 m (CNCI); Whitehorse (CNCI); 6 km S Tuchtina R. 60°52'N 129°15'W (SMDV); km 1158.5 Alaska Hwy.

Biological information: Larvae feed in seedpods of *Lupinus* and *Astragalus* (Leguminosae). Adults collected in Yukon 8 June–21 July.

122. *Delia flavogrisea* (Ringdahl) Palaeartic-East Beringian

Distribution: Yukon, Mackenzie Delta (Aklavik); northeastern China, northern Europe.

Yukon records: Herschel Is. (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon on 9 July.

123. *Delia mackinleyana* Griffiths Beringian

Distribution: Alaska (Mt. McKinley National Park), Yukon.

Yukon records: North Fork Pass km 82 Dempster Hwy. (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Takhini Hot Springs at 730 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 30 June–19 August.

124. *Delia diluta* (Stein) Holarctic including Beringian

Distribution: Yukon, British Columbia (Prince Rupert-Terrace district, Lac Le Jeune), Uranium City (Saskatchewan), Labrador and Newfoundland, Colorado (Rabbit Ears Pass); northern and central Europe, China.

Yukon records: Takhini Hot Springs (SMDV).

Biological information: Associated with coastal blanket bog in Newfoundland, larval biology unknown. Adults collected in Yukon 31 May.

125. *Delia cilifera* (Malloch) Nearctic including East Beringian

Distribution: Alaska (widespread), Yukon, mountains from northern British Columbia south to the Californian Sierra Nevada and Colorado (mainly in subalpine zone); disjunct race at 2000–4000 m in central Mexican Highlands.

Yukon records: Swim Lks. 62°13'N 133°W at 975 m (CNCI).

Biological information: Larval biology unknown. Adults collected in Yukon 23 June.

126. *Delia setigera* (Stein) Holarctic including Beringian

Distribution: Central and southern Alaska, Yukon, boreal Canada from Mackenzie Delta and central Alberta to Labrador and Nova Scotia, western Cordillera from northern British Columbia south to Colorado, Arizona and Mexico State (mainly at low elevation), West Greenland (Søndrestrøm); Iceland, northern Europe, China.

Yukon records: Firth R. (CNCI); km 141 Dempster Hwy. (SMDV); Dawson (CNCI); Klondike R. 64°21'N 138°25'W (SMDV); 6 km S Tuchtina R. 60°52'N 129°15'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 13 June–3 August.

127. *Delia pilifemur* (Ringdahl) Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, boreal to low arctic Canada from Great Bear L. (Northwest Territories) and central Alberta east to Michigan, (northern and southern) Quebec and Nova Scotia, British Columbia (Atlin and Robson), alpine zone of Colorado Rockies (above 3000 m); northern Europe.

Yukon records: Rampart House (CNCI); North Fork Pass km 82 Dempster Hwy. at 1250–1310 m (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Otter L. 62°30'N 130°25'W at 1220 m (CNCI); Dickson L. on Mt. Mye 62°21'N 133°08'W at 1524 m (CNCI); Macmillan Pass (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon 10 June–17 July.

128. *Delia antiqua* (Meigen) Holarctic including Beringian

Distribution: Widespread in cultivated areas of Palaeartic region and North America, introduced in South America; native occurrences in North America in the Yukon and at Circle Hot Springs (Alaska) and Vancouver Island (British Columbia).

Yukon records: 6 km E Old Crow (SMDV); LaForce L. 62°41'N 132°20'W at 1006 m (CNCI).

Biological information: This is the notorious onion maggot, the principal pest of onion cultivation in the northern hemisphere; the larvae mainly infest the bulbs, but can also feed in stems and seed balls. The Yukon collections are believed to represent native populations associated with the wild *Allium schoenoprasum* L. Adults collected in Yukon 29 June–8 July.

129. *Delia tumidula* Ringdahl Palaeartic-East Beringian

Distribution: Yukon, Mackenzie Delta (Aklavik); northern and central Europe, Korea.

Yukon records: Lake Cr. at 61°48'N 140°02'W (SMDV).

Biological information: Larval biology unknown. Adults collected in Yukon on 23 June.

130. *Delia florilega* (Zetterstedt) Holarctic including Beringian

Distribution: Alaska (widespread), Yukon, boreal to low arctic Canada from Mackenzie Delta and central Alberta east to Labrador, Newfoundland and Nova Scotia, northeastern United States south to North Carolina, along West Coast south to San Francisco Bay (California), also in alpine zone of Colorado Rockies; northern and central Europe, Siberia, China.

Yukon records: Herschel Is. (CNCI); North Fork Crossing km 68 Dempster Hwy. at 1070 m (CNCI); Dawson (CNCI); Snag (CASC); Sheldon L. 62°40'N 131°06'W at 914 m (CNCI); LaForce L. 62°41'N 132°20'W at 914 m (CNCI); Squanga L. km 1366 Alaska Hwy. (CASC); Klukshu.

Biological information: Larvae are root maggots feeding on a wide range of plants (especially previously damaged roots), as well as on sprouting seedlings of legumes and other plants with large seeds; considered a significant economic pest. Adults collected in Yukon 14 June–31 August.

131. *Delia platura* (Meigen) Holarctic including Beringian

Distribution: Cosmopolitan (occurring in all biogeographic regions except Antarctica), including central and southern Alaska, throughout Canada from Mackenzie Delta to Chesterfield (Northwest Territories), arctic Quebec and Labrador southwards, Southwest Greenland, ubiquitous in contiguous United States (from deserts below sea level to the summit of Mt. Evans in Colorado at 4267 m), also widespread in Mexico.

Yukon records: North Fork Pass km 82 Dempster Hwy. at 1250–1310 m (CNCI); North Fork Crossing km 69 Dempster Hwy. at 1070 m (CNCI); Aishihik R. on Alaska Hwy. (SMDV); 14 km N Canyon on Aishihik R. (SMDV); Whitehorse (CNCI); Strawberry Cr. 60°05'N 132°20'W (SMDV).

Biological information: Larvae are root maggots feeding on a wide range of plants (especially previously damaged roots), as well as on sprouting seedlings, hypogeous fungal fruiting bodies, and inert animal material in soil (especially egg-pods of acridoid grasshoppers); oviposition is stimulated by soil disturbance. This is the notorious seedcorn maggot, a major pest which has achieved an almost cosmopolitan distribution due to its ability to adapt to local conditions by aestivating as well as hibernating. Its presence in the native fauna of the Ogilvie Mountains in the Yukon indicates that it is of northern origin. Adults collected in Yukon 25 June–21 August.

Additional Species Expected to Occur in the Yukon

132. *Pegomya rugulosa* (Zetterstedt) reported from Alaska (Cape Thompson and Katmai) and arctic Quebec (Payne Bay) as well as northern and central Europe; Holarctic including Beringian.
133. *Pegomya flavifrons* (Walker) reported from Alaska (north to Kotzebue), widely in Canada from treeline south to California and the Great Smoky Mountains (Tennessee and North Carolina), West Greenland (to 67°N) and widely in the Palaeartic region; Holarctic including Beringian.
134. *Pegomya calypttrata* (Zetterstedt) reported from Fairbanks (Alaska), Tuktoyaktuk (Northwest Territories), Alberta, Manitoba, Montana, Washington, and northern and central Europe; Holarctic including Beringian.
135. *Pegomya geniculata* (Bouché) reported from Alaska (as far north as Tanana Valley), widely in boreal North America south to northernmost California and the Great Smoky Mountains, Europe, northeastern and northern China, and Japan; Holarctic including Beringian.
136. *Pegomya holmgreni* (Bohemian) reported from Alaska (Tanana Valley), northern British Columbia (Summit L. Pass), Alberta, and northern and central Europe; Holarctic including Beringian.
137. *Pegomya ventralis* Stein described from central Europe and known in North America from a specimen taken at Atlin (British Columbia) just below the Yukon border; Palaeartic-East Beringian.
138. *Pegoplata aestiva* (Meigen) reported from the Alaska Range (Alaska), mountains of southern British Columbia, Alberta and Washington south to Colorado, and disjunctly in eastern Canada and the northeastern United States, also in Europe, the Himalaya and northern China; Holarctic including Beringian.
139. *Pegoplata infirma* (Meigen) reported from Matanuska (Alaska) and widely in boreal North America (reaching Atlin in British Columbia close to the Yukon border) south to northernmost

- California and the Great Smoky Mountains, Europe, Iceland, northern China and Japan; Holarctic including Beringian.
140. *Pegoplata cuticornis* (Huckett) taken at Log Jam Cr. km 1218 Alaska Hwy. in the Cassiar Mountains (USNM) just below the Yukon border, otherwise known from the mountains of southern British Columbia and Alberta (at 1830–2320 m, both above and below treeline); Nearctic excluding East Beringia.
 141. *Myopina myopina* (Fallén) reported from Alaska (Alaska Range, Katmai, Valdez), widely in boreal and low arctic Canada to New Hampshire and in the Palaearctic region; Holarctic including Beringian.
 142. *Myopina martini* Griffiths described from Umiat on the Alaskan North Slope; Beringian.
 143. *Paradelia ventribarbata* Griffiths taken at Fairbanks (Alaska) as well as in Saskatchewan (Prince Albert) and in the subalpine zone (2500–3000 m) of the Rocky Mountains in Wyoming and Colorado; Nearctic including East Beringian.
 144. *Alliopsis pseudosilvestris* Griffiths described from Nome (Alaska) and Summit L. at 1370 m (km 631 Alaska Hwy.) in northern British Columbia; Beringian.
 145. *Alliopsis arelate* (Walker) found along the Pacific Coast from Matanuska (Alaska) to central British Columbia, as well as from scattered montane, boreal and subarctic localities in Canada (north of Great Slave L., Banff and Edmonton in Alberta, Churchill, Marten Falls in northern Ontario); Nearctic including East Beringian.
 146. *Alliopsis moerens* (Zetterstedt) reported from Alaska (Naknek and North Slope), and widely in low arctic Canada (south to New Brunswick on Atlantic Coast), Fennoscandia and northeastern China; Holarctic including Beringian.
 147. *Delia nivalis* Griffiths taken at Umiat on the Alaskan North Slope as well as farther south in the western mountains (southern British Columbia and Alberta to California and Colorado, mainly in the subalpine to alpine zones); Nearctic including East Beringian.
 148. *Delia opacitas* (Huckett) reported from low arctic (mainly coastal) localities from Churchill (Manitoba) to Cape Thompson (Alaska), as well as inland in Mongolia; Holarctic including Beringian.
 149. *Delia abstracta* (Huckett) reported from the Mackenzie Delta and Tuktoyaktuk as well as from Mongolia; Palaearctic-East Beringian.
 150. *Delia alaskana* (Huckett) described from Lower Tonsina (between the Chugach and Wrangell Ranges) in Alaska; Beringian.
 151. *Delia martini* Griffiths, reported from western Canada (British Columbia, Alberta, Saskatchewan), as well as Finland and Siberia, which has been collected at Atlin, close to the Yukon border; Holarctic including Beringian.

Species Occurring in Alaska but Not Expected in the Yukon

This section documents species occurring in Alaska (exclusive of the Panhandle) but not listed as expected in the Yukon, because they are confined to the West or South Coast of Alaska or because their Alaskan distribution is disjunct. Included here are 16 species, of which 15 are known in Alaska only from coastal localities. The remaining species, *Pegomya tabida* (Meigen), also occurs inland in the Tanana Valley, but its occurrence in Alaska is so widely disjunct from the rest of its North American range that its presence in the Yukon seems unlikely.

152. *Pegomya bicolor bicolor* (Wiedemann) occurs on the Alaska Peninsula, widely disjunctly from its main North American range in northeastern North America, also in Europe. The larvae are leaf-miners on *Rumex* spp. (Polygonaceae).
153. *Pegomya pseudobicolor* Griffiths, another *Rumex*-miner, occurs in Katmai and the Alaska Panhandle south to California, as well as inland in southern British Columbia and central Alberta.
154. *Pegomya holosteeae* Hering is found along the Pacific Coast from Valdez (Alaska) to San Francisco (California), also inland in Idaho and Colorado and apparently disjunctly in eastern North America, also in Europe, China and Japan. The larvae are leaf-miners on *Stellaria* and *Cerastium* (Caryophyllaceae).

155. *Pegomya alticola* Hockett occurs in Nome (Alaska) and (apparently disjunctly) in mountains from southern British Columbia to Colorado and Oregon, also in Japan.
156. *Pegomya quadralis* Hockett is a rare species known only from Palmer (Alaska) and Aweme (Manitoba).
157. *Pegomya tabida* (Meigen) occurs disjunctly in Alaska (Naknek and Tanana Valley) and in the Appalachians (New Hampshire to North Carolina), also in northern and central Europe. The larvae feed on mushrooms of the *Leccinum scabrum* group (Boletaceae).
158. *Pegomya caesia* Stein has been reported from Anchorage (Alaska) and across boreal Canada (British Columbia to Nova Scotia) south to South Dakota and New York, also in northern and central Europe. The larvae have been found in mushrooms of *Agaricus arvensis* Fr. (Agaricaceae).
159. *Paradelia lunatifrons* (Zetterstedt) has been found at Matanuska (Alaska) and Aklavik (Northwest Territories), as well as in Alberta, southern British Columbia, Oregon, New York, Maine, northern and central Europe, Kamchatka, Japan.
160. *Delia angustiventralis* (Hockett) has been collected at Anchorage (Alaska), widely disjunct from its main range in the western United States.
161. *Delia alaba* (Walker) is a widespread boreal-Cordilleran species in North America found also on the Alaskan South Coast.
162. *Delia bisetosa* (Stein) occurs in North America only on the coasts of Alaska (Anchorage and Unalakleet), otherwise known from coastal sand dunes in Europe and inland in western China.
163. *Delia armata* (Stein) is an exclusively coastal species ranging from Valdez (Alaska) to Washington (Orcas Is.).
164. *Delia montivagans* (Hockett) is distributed mainly in the mountains from southern British Columbia and Alberta to California and Colorado, occurring farther north only on the Pacific Coast of British Columbia and Alaska (Anchorage).
165. *Delia simpla* (Coquillett) is distributed along the Pacific Coast from Valdez (Alaska) to northern California, occurring in inland mountain ranges only from southern British Columbia to Colorado.
166. *Delia prostriata* (Hockett) is known only from the Alaskan South Coast (SE Anchorage) and Moosehorn L. in northern British Columbia.
167. *Delia sanctijacobi* (Bigot) native to southern South America has also been found (suspected to have been introduced with Chilean vegetables) at coastal localities in western Alaska (Cold Bay and Unalakleet).

Alphabetic List of Species

| | | | |
|--|-----|-----------------------------------|-----|
| <i>Alliopsis albipennis</i> (Ringdahl) | 60 | <i>albula albula</i> (Fallén) | 112 |
| <i>aldrichi</i> (Ringdahl) | 64 | <i>angustaeformis</i> (Ringdahl) | 93 |
| <i>arelate</i> (Walker) | 145 | <i>angustifrons</i> (Meigen) | 115 |
| <i>arnaudi</i> Griffiths | 63 | <i>angustiventralis</i> (Hockett) | 160 |
| <i>attenuata</i> Griffiths | 53 | <i>aniseta</i> (Stein) | 95 |
| <i>benanderi</i> (Ringdahl) | 69 | <i>antiqua</i> (Meigen) | 128 |
| <i>conifrons</i> (Zetterstedt) | 58 | <i>armata</i> (Stein) | 163 |
| <i>constrictor</i> (Malloch) | 57 | <i>beringiana</i> Griffiths | 120 |
| <i>denticauda</i> (Zetterstedt) | 56 | <i>bisetosa</i> (Stein) | 162 |
| <i>dentiventris</i> (Ringdahl) | 67 | <i>bucculenta</i> (Coquillett) | 82 |
| <i>fractiseta</i> (Stein) | 59 | <i>cilifera</i> (Malloch) | 125 |
| <i>gentilis</i> (Hockett) | 65 | <i>concorda</i> (Hockett) | 107 |
| <i>glacialis</i> (Zetterstedt) | 51 | <i>coronariae</i> (Hendel) | 73 |
| <i>laminata</i> (Zetterstedt) | 61 | <i>cuneata</i> Tiensuu | 100 |
| <i>longipennis</i> (Ringdahl) | 66 | <i>cupricrus</i> (Walker) | 92 |
| <i>moerens</i> (Zetterstedt) | 146 | <i>deviata</i> (Hockett) | 121 |
| <i>obesa</i> Malloch | 52 | <i>diluta</i> (Stein) | 124 |
| <i>pilitarsis</i> (Stein) | 68 | <i>dissimilipes</i> (Hockett) | 114 |
| <i>pseudosilvestris</i> Griffiths | 144 | <i>dovreensis</i> Ringdahl | 81 |
| <i>sepiella</i> (Zetterstedt) | 62 | <i>echinata</i> (Séguy) | 75 |
| <i>silvestris</i> (Fallén) | 54 | <i>extensa</i> (Hockett) | 111 |
| <i>teriolensis</i> (Pokorny) | 55 | <i>fabricii</i> (Holmgren) | 102 |
| <i>Delia abruptiseta</i> (Ringdahl) | 99 | <i>flavogrisea</i> (Ringdahl) | 122 |
| <i>abstracta</i> (Hockett) | 149 | <i>floralis</i> (Fallén) | 72 |
| <i>aemene</i> (Walker) | 98 | <i>florilega</i> (Zetterstedt) | 130 |
| <i>alaba</i> (Walker) | 161 | <i>garretti</i> (Hockett) | 105 |
| <i>alaskana</i> (Hockett) | 150 | <i>gracilipes</i> (Malloch) | 104 |
| | | <i>groenlandica</i> Griffiths | 119 |

| | | | |
|---|-----|---|-----|
| <i>hirtitibia</i> (Stein) | 113 | <i>Paradelia abbreviata</i> (Pokorny) | 47 |
| <i>inconspicua</i> (Huckett) | 80 | <i>arctica</i> (Ringdahl) | 50 |
| <i>integralis</i> (Huckett) | 85 | <i>helleni</i> (Ringdahl) | 48 |
| <i>leptinostylos</i> (Huckett) | 118 | <i>intersecta</i> (Meigen) | 49 |
| <i>linearis</i> (Stein) | 74 | <i>lunatifrons</i> (Zetterstedt) | 159 |
| <i>lineariventris</i> (Zetterstedt) | 90 | <i>lundbeckii</i> (Ringdahl) | 43 |
| <i>longicauda</i> (Strobl) | 79 | <i>ogilviensis</i> Griffiths | 46 |
| <i>mackinleyana</i> Griffiths | 123 | <i>palpata</i> (Stein) | 44 |
| <i>martini</i> Griffiths | 151 | <i>trigonaloides</i> Griffiths | 143 |
| <i>megatricha</i> (Kertész) | 94 | <i>ventribarbata</i> Griffiths | |
| <i>montivagans</i> (Huckett) | 164 | | |
| <i>mutans</i> (Huckett) | 84 | <i>Parapegomyia socculata socculata</i> | |
| <i>neomexicana</i> (Malloch) | 108 | (Zetterstedt) | 26 |
| <i>nigricaudata</i> (Huckett) | 97 | | |
| <i>nigripennis</i> Griffiths | 86 | <i>Pegomya alticola</i> Huck | 155 |
| <i>nivalis</i> Griffiths | 147 | <i>aninotata</i> Huckett | 25 |
| <i>notobata</i> Griffiths | 70 | <i>bicolor bicolor</i> (Wiedemann) | 152 |
| <i>nuda</i> (Strobl) | 77 | <i>caesia</i> Stein | 158 |
| <i>opacitas</i> (Huckett) | 148 | <i>calyptata</i> (Zetterstedt) | 134 |
| <i>pectinator</i> Suwa | 116 | <i>circumpolaris</i> Ackland and Griffiths | 16 |
| <i>pilifemur</i> (Ringdahl) | 127 | <i>conformis</i> (Fallén) ssp. <i>sitiens</i> Huckett | 5 |
| <i>planipalpis</i> (Stein) | 71 | <i>depressiventris</i> (Zetterstedt) | 8 |
| <i>platura</i> (Meigen) | 131 | <i>flavifrons</i> (Walker) | 133 |
| <i>polaris</i> Griffiths | 78 | <i>flavoscutellata</i> (Zetterstedt) | 24 |
| <i>propinqua</i> (Huckett) | 106 | <i>furva</i> Ringdahl | 15 |
| <i>prostriata</i> (Huckett) | 166 | <i>geniculata</i> (Bouché) | 135 |
| <i>pseudochinata</i> Griffiths | 76 | <i>holmgreni</i> (Boheman) | 136 |
| <i>pseudorainieri</i> Griffiths | 110 | <i>holostaeae</i> Hering | 154 |
| <i>repleta</i> (Huckett) | 91 | <i>icterica</i> (Holmgren) | 3 |
| <i>rondanii</i> (Ringdahl) | 117 | <i>incisiva</i> Stein | 20 |
| <i>sanctijacobi</i> (Bigot) | 167 | <i>indicta</i> Huckett | 10 |
| <i>schistophalla</i> Griffiths | 83 | <i>nigra</i> Suwa | 4 |
| <i>seriata</i> (Stein) | 101 | <i>notabilis</i> (Zetterstedt) | 21 |
| <i>setigera</i> (Stein) | 126 | <i>petasitae</i> Griffiths | 11 |
| <i>simpla</i> (Coquillett) | 165 | <i>pribilofensis</i> Huckett | 7 |
| <i>sobrians</i> (Huckett) | 109 | <i>pseudobicolor</i> Griffiths | 153 |
| <i>tarsata</i> (Ringdahl) | 89 | <i>quadrails</i> Huckett | 156 |
| <i>tenuiventris</i> (Zetterstedt) | 96 | <i>ruficeps</i> (Zetterstedt) | 22 |
| <i>tumidula</i> Ringdahl | 129 | <i>rugulosa</i> (Zetterstedt) | 132 |
| <i>uniseriata</i> (Stein) | 88 | <i>scapularis</i> (Zetterstedt) | 18 |
| <i>unispina</i> Yudin | 103 | <i>setibasis</i> Huckett | 23 |
| <i>xanthobasis</i> (Huckett) | 87 | <i>stagnalis</i> Griffiths | 1 |
| | | <i>tabida</i> (Meigen) | 157 |
| <i>Eutrichota frigida</i> (Zetterstedt) | 34 | <i>terminalis</i> (Rondani) | 12 |
| <i>labradorensis</i> (Malloch) | 28 | <i>tinctisquama</i> Huckett | 6 |
| <i>lipsia</i> (Walker) | 36 | <i>transgressa</i> (Zetterstedt) | 14 |
| <i>longimana</i> (Pokorny) | 35 | <i>valgenovensis</i> Hennig | 9 |
| <i>parafacialis</i> (Huckett) | 32 | <i>ventralis</i> Stein | 137 |
| <i>partita</i> (Huckett) | 29 | <i>versicolor</i> (Meigen) | 2 |
| <i>setosa</i> (Stein) | 33 | <i>vittigera</i> (Zetterstedt) | 19 |
| <i>tarsata</i> (Wulp) | 37 | <i>winthemi</i> (Meigen) | 13 |
| <i>triticiperda</i> (Stein) | 31 | <i>zonata</i> (Zetterstedt) | 17 |
| <i>tunicata</i> (Zetterstedt) | 27 | | |
| <i>woodi</i> Griffiths | 30 | <i>Pegoplata aestiva</i> (Meigen) | 138 |
| | | <i>cuticornis</i> (Huckett) | 140 |
| <i>Myopina crassipalpis</i> Ringdahl | 42 | <i>infirma</i> (Meigen) | 139 |
| <i>martini</i> Griffiths | 142 | <i>nigroscutellata</i> (Stein) | 38 |
| <i>myopina</i> (Fallén) | 141 | <i>patellans</i> (Pandellé) | 40 |
| <i>scoparia</i> (Zetterstedt) | 41 | <i>tundrica</i> (Schnabl) | 39 |

Synopsis of Biogeographic Categories and Subcategories

1. Beringian. Species with restricted ranges not extending far beyond unglaciated areas of East Beringia in Alaska and Yukon. Because of lack of information on the fauna of West Beringia, we do not know whether these species also occur there, so no distinction can be drawn at this time between East Beringian endemic species and species found both in East

and West Beringia. Included in this category are 11 species, of which 8 have been collected in the Yukon and the other 3 are to be expected, as follows: *Pegomya indicta* (10), *P. petasitae* (11), *Eutrichota woodi* (30), *Myopina martini* (142), *Paradelia trigonaloides* (45), *P. ogilviensis* (46), *Alliopsis pseudosilvestris* (144), *Delia notobata* (70), *D. dissimilipes* (114), *D. alaskana* (150) and *D. mackinleyana* (123).

2. Palaearctic-East Beringian. Species (or in one case subspecies) with extensive Palaearctic ranges but in North America not extending far beyond unglaciated areas of East Beringia in Alaska and Yukon. Included in this category are 16 taxa (15 species plus one subspecies), of which 14 have been collected in the Yukon and the other 2 are to be expected. This category can be further subdivided into category **2a** (East Palaearctic-Beringian) containing only 2 species, *Delia abstracta* (149) and *D. beringiana* (120), and category **2b** (Transpalaearctic-Beringian) containing the remaining 14 taxa, as follows: *Pegomya valgenovensis* (9), *P. ventralis* (137), *Parapegomyia socculata socculata* (26), *Alliopsis glacialis* (51), *A. teriolensis* (55), *A. laminata* (61), *A. aldrichi* (64), *A. benanderi* (69), *Delia coronariae* (73), *D. angustaeformis* (93), *D. abruptiseta* (99), *D. angustifrons* (115), *D. flavogrisea* (122) and *D. tumidula* (129). Apparent disjunctions between European and East Beringian distributions of some species in category 2b may not be real, but reflect inadequate knowledge of the fauna of Siberia.

3. Nearctic including East Beringian. Species (or in one case subspecies) found in unglaciated areas of East Beringia in Alaska and Yukon which have extensive North American ranges but have not been recorded from the Palaearctic region. Included in this category are 34 taxa (33 species plus one subspecies), of which 31 have been collected in the Yukon and the other 3 are to be expected. This category can be further subdivided as follows:

3a. Boreal/Temperate Lowland. Species (or subspecies) widespread east of the Rocky Mountains but limited to lowland sites within the western Cordillera. Only 2 such taxa reach unglaciated areas of the Yukon, *Pegomya stagnalis* (1) and *P. conformis sitchensis* (5).

3b. Boreal-Cordilleran. Species with predominantly boreal ranges east of the Rocky Mountains as well as Cordilleran ranges south of the Yukon (in two cases also with range extensions in the northern prairie zone). In the southwestern Cordilleran part of their ranges such species are usually found in the montane to subalpine zones. The following 11 species belong here: *Eutrichota tarsata* (37), *Paradelia ventribarbata* (143), *Alliopsis constrictor* (57), *A. arelate* (145), *Delia mutans* (84), *D. cupricrus* (92), *D. aniseta* (95), *D. aemene* (98), *D. garretti* (105), *D. propinqua* (106) and *D. pseudorainieri* (110).

3c. Cordilleran-Atlantic. Species with disjunct western Cordilleran and northeastern ranges. This uncommon distribution type is exemplified by *Delia groenlandica* (119).

3d. Cordilleran. Species whose ranges south of the Yukon are primarily Cordilleran, not or scarcely extending east of the Rocky Mountain foothills. Included are species whose zonal preference farther south ranges from montane to alpine. The following 18 species belong here: *Pegomya tinctisquama* (6), *P. pribilofensis* (7), *Eutrichota parafacialis* (32), *E. setosa* (33), *Alliopsis attenuata* (53), *A. arnaudi* (63), *Delia nivalis* (147), *D. pseudechinata* (76), *D. schistophalla* (83), *D. nigripennis* (86), *D. nigricaudata* (97), *D. seriata* (101), *D. gracilipes* (104), *D. sobrians* (109), *D. extensa* (111), *D. leptinostylos* (118), *D. deviata* (121) and *D. cilifera* (125).

3e. Arctic-Alpine. Species found both in the arctic lowlands and in the alpine zone of mountains south of the Yukon. An excellent example of this distribution type is provided by *Delia polaris* (78).

3f. Arctic Lowland. Species confined to the arctic lowlands, without Cordilleran range extension. This distribution type is exemplified by *Delia integralis* (85).

4. Nearctic excluding East Beringia. Nearctic species reaching formerly glaciated areas of southern Yukon but not recorded from unglaciated (Beringian) areas in Alaska and Yukon. It is necessary to separate this category from category 3 (Nearctic-Beringian) for the purpose of discussing the fauna of Beringia, though in some other contexts these categories could be combined. Included in this category are 5 species, of which 4 have been collected in the Yukon and the other one is to be expected. If we subdivide this category along the same lines as category 3, the subcategories are as follows:

4a. Boreal/Temperate Lowland. Species widespread east of the Rocky Mountains but limited to lowland sites, if present, within the western Cordillera. *Eutrichota lipsia* (36) belongs here.

4b. Cordilleran. Species with Cordilleran ranges not extending east of the Rocky Mountains. Two species belong here, *Pegoplata cuticornis* (140) and *Alliopsis gentilis* (65).

4c. Cordilleran-Prairie. Species with ranges both within the western Cordillera and east of the Rocky Mountains in the prairie zone. In the Cordilleran part of their ranges such species are usually found on dry open slopes. This distribution type has been documented for several plants occurring in the Yukon. I refer here two anthomyiid species, *Pegomya setibasis* (23) and *Delia concorda* (107).

5. Holarctic including Beringian. Species occurring in the Palaearctic region and unglaciated areas of East Beringia (in Alaska and Yukon), as well as widely in North America outside Alaska and Yukon. Included in this category are 85 species, of which 74 have been collected in the Yukon and the other 11 are to be expected. This category can be further subdivided as follows:

5a. Cosmopolitan. Species occurring on all continents except Antarctica. One species, *Delia platyura* (131), merits this status.

5b. Transpalaearctic-Nearctic Boreal/Cordilleran. Species occurring in Europe as well as with extensive boreal and Cordilleran ranges in North America outside Alaska and Yukon. Apparent disjunctions between European and East Beringian - Nearctic distributions in some species are unlikely to be real, but more probably reflect inadequate knowledge of the Siberian fauna. In the southwestern Cordilleran part of their ranges such species are usually found in the montane to subalpine zones. This type of distribution pattern is the most prevalent among the fauna of the Yukon. I refer here the following 36 species: *Pegomya versicolor* (2), *P. flavifrons* (133), *P. depressiventris* (8), *P. terminalis* (12), *P. winthemi* (13), *P. furva* (15), *P. vittigera* (19), *P. incisiva* (20), *P. ruficeps* (22), *P. calyptrata* (134), *P. geniculata* (135), *P. holmgreni* (136), *P. aninotata* (25), *Eutrichota labradorensis* (28), *E. frigida* (34), *E. longimana* (35), *Pegoplata nigroscutellata* (38), *P. aestiva* (138), *P. infirma* (139), *P. patellans* (40), *Paradelia palpata* (44), *P. intersecta* (49), *Alliopsis silvestris* (54), *A. dentiventris* (67), *Delia planipalpis* (71), *D. floralis* (72), *D. linearis* (74), *D. uniseriata* (88), *D. lineariventris* (90), *D. megatricha* (94), *D. tenuiventris* (96), *D. cuneata* (100), *D. diluta* (124), *D. setigera* (126), *D. martini* (151) and *D. antiqua* (128).

5c. East Palaearctic-Nearctic Boreal/Cordilleran. Species restricted to the eastern Palaearctic but with extensive boreal and Cordilleran (in some cases also low arctic) ranges in North America outside Alaska and Yukon. The following 5 species belong here: *Delia inconspicua* (80), *D. bucculenta* (82), *D. unispina* (103), *D. neomexicana* (108) and *D. pectinator* (116).

5d. Transpalaeartic-Nearctic Boreal/Low Arctic/Cordilleran. Species having a broader ecological amplitude than those in category 5b, in that they have extensive low arctic in addition to boreal and Cordilleran ranges in North America outside Alaska and Yukon. The following 13 species belong here: *Pegomya zonata* (17), *P. scapularis* (18), *P. notabilis* (21), *P. flavoscutellata* (24), *Alliopsis conifrons* (58), *A. fractiseta* (59), *A. longipennis* (66), *Delia echinata* (75), *D. longicauda* (79), *D. tarsata* (89), *D. repleta* (91), *D. pilifemur* (127) and *D. florilega* (130).

5e. Transpalaeartic-Nearctic Cordilleran. Species whose ranges in North America south of the Yukon are primarily Cordilleran, not extending east of the Rocky Mountains; but expected to have extensive Palaeartic ranges since recorded from Europe. The following 5 species belong here: *Eutrichota partita* (29), *Paradelia abbreviata* (47), *Alliopsis sepiella* (62), *A. pilatarsis* (68) and *Delia dovreensis* (81).

5f. East Palaeartic-Nearctic Cordilleran. Species restricted outside Beringia to the mountains of the eastern Palaeartic and western Nearctic. This distribution type is exemplified by *Pegomya nigra* (4).

5g. Circumboreal Dune-dwelling. Species found on sand dunes in the boreal zone of both the Palaeartic and Nearctic regions. One species, *Delia albula* (112), belongs here.

5h. Circumpolar High Boreal/Low Arctic. Species with extensive ranges in the high boreal and low arctic zones of North America, but without Cordilleran range extension south of the Yukon; expected also to have extensive Palaeartic ranges since recorded from Europe. The following 9 species belong here: *Pegomya rugulosa* (132), *P. circumpolaris* (16), *Myopina myopina* (141), *M. scoparia* (41), *Paradelia lundbeckii* (43), *Alliopsis moerens* (146), *A. denticauda* (56), *Delia fabricii* (102) and *D. hirtitibia* (113).

5i. Circumpolar Arctic Lowland. Species distributed primarily in the arctic lowlands of North America, without Cordilleran range extension south of the Yukon (at most occurring in mountains of northern Alaska and Yukon), with Palaeartic ranges in most cases extending to Europe. The following 7 species belong here: *Eutrichota tunicata* (27), *Myopina crassipalpis* (42), *Paradelia arctica* (50), *Alliopsis obesa* (52), *A. albipennis* (60), *Delia opacitas* (148) and *D. xanthobasis* (87).

5j. Circumpolar Arctic-Alpine. Species found both in the arctic lowlands of North America and in the alpine zone of mountains south of the Yukon; expected also to have extensive Palaeartic ranges since recorded from Europe. The following 7 species belong here: *Pegomya icterica* (3), *P. transgressa* (14), *Eutrichota triticiperda* (31), *Pegoplata tundrica* (39), *Paradelia helleni* (48), *Delia nuda* (77) and *D. rondanii* (117).

The Anthomyiid Fauna and East Beringia

The numbers of species (or subspecies) in the genera of Anthomyiidae revised in the first ten issues of my treatment in the Flies of the Nearctic Region (Griffiths 1982–93) are tabulated in Table 1 according to biogeographic categories. Inclusion or exclusion of “expected” species does not significantly affect the relative percentages. The East Beringian totals include species presently occurring or expected in unglaciated areas of Alaska and the Yukon, excluding species known only from the South Coast of Alaska or from glaciated southern areas of the Yukon (Nearctic excluding Beringia).

The Beringian category mainly includes species found on open tundra above or beyond treeline. This supports the finding of Lafontaine and Wood (1988) based on an analysis of noctuid moths that there is a high degree of endemism in tundra (especially dry tundra) habitats within Beringia. Exceptions are *Pegomya indicta* (10) (Fig. 1), whose hostplant

grows mainly on gravel bars, and possibly *Delia alaskana* (150) known from a unique specimen whose habitat is unknown. The absence of endemic forest-dwelling species is consistent with the prevailing interpretation that forests were much reduced or eliminated in Beringia during peaks of glaciation (see Hopkins 1967).

The Palaearctic-East Beringian category includes some tundra-dwelling species, such as *Alliopsis glacialis* (51) (Fig. 2), *Delia abruptiseta* (99) and *D. beringiana* (120), but others appear associated with boreal lowland habitats, e.g. *Parapegomyia socculata socculata* (26) and *Delia angustaeformis* (93). One species, *Delia angustifrons* (115), is confined to coastal sand dunes. Unfortunately many of the species in this category have been rarely collected and are of unknown life-history. Why they have reached East Beringia but have been unable to spread much farther in North America cannot be discussed in detail without more biological information. However, it seems likely that their dispersal may be impeded by continuous boreal forest, because this category does not include any of the abundant forest-dwelling species.

The category Nearctic including East Beringian includes species present today in unglaciated parts of East Beringia in Alaska and the Yukon as well as elsewhere in North America well beyond the confines of East Beringia, e.g. *Eutrichota tarsata* (37) (Fig. 3). Some such species doubtless survived glacial periods in Beringia, as well as south of the glaciers. Others may be postglacial colonists of East Beringia. The great majority of these Nearctic-Beringian species have boreal-Cordilleran or Cordilleran distributions. Only two arctic species have been listed here, *Delia integralis* (85) and *D. polaris* (78), and it will not be surprising if these subsequently also prove to have Siberian ranges (causing their transfer to the Holarctic including Beringian category).

The category Nearctic excluding East Beringia has been separated from the preceding for the purpose of discussing the fauna of East Beringia. Included are species which can definitely be assumed to be postglacial colonists of the southern Yukon, because they have not been found in unglaciated areas. Two of the species included here, *Pegomya setibasis* (23) and *Delia concorda* (107), have unusual prairie-Cordilleran distributions. *Eutrichota lipsia* (36) (Fig. 4), a widespread and often abundant species east of the Rockies, is almost certainly a recent colonist since it was not collected in the Yukon prior to 1981. The remaining two Cordilleran species, *Alliopsis gentilis* (65) and *Pegoplata cuticornis* (140), have been rarely collected, so future records may change the interpretation of their distribution.

The most striking feature of the anthomyiid data is the predominance of Holarctic including Beringian species, which amount to more than half of the total fauna. Included here are species associated with all major habitats, including dry tundra, moist tundra e.g. *Pegomya circumpolaris* (16) (Fig. 5), montane forest, lowland boreal forest and open grassy slopes. Lafontaine and Wood (1988) reported that in noctuids the proportion of Holarctic species is much lower in taiga than in tundra habitats, but this difference is much less pronounced in anthomyiids. The long list of species in category 5b (Transpalaearctic-Nearctic Boreal/Cordilleran) includes most of the species I would consider obligate forest-dwellers, such as several of the *Pegomya* species breeding in boletaceous mushrooms. The fact that many forest-dwelling anthomyiids have Holarctic distributions suggests that the separation of West and East Beringian forests has at times been insufficient to prevent exchange of their anthomyiid fauna. How this finding is to be reconciled with the current opinion that there are no species of forest trees native both to West and East Beringia is not entirely clear. Doubtless the flies can disperse over greater distances than can the seeds of conifers, but this does not necessarily apply to the windborne seeds of *Populus* spp.

TABLE 1. Numbers of species (or subspecies) of Anthomyiidae in the fauna of the Yukon and Alaska (exclusive of the Panhandle).

| Biogeographic Category | Confirmed in Yukon | Expected in Yukon | Total for Yukon | Confirmed in East Beringia | Expected in East Beringia | Total for East Beringia |
|---------------------------------------|--------------------|-------------------|-----------------|----------------------------|---------------------------|-------------------------|
| 1. Beringian | 8 (6.1%) | 3 | 11 (7.3%) | 11 (7.5%) | – | 11 (7.3%) |
| 2. Palaeartic-East Beringian | 14 (10.7%) | 2 | 16 (10.6%) | 15 (10.3%) | 2 | 17 (11.3%) |
| 3. Nearctic including East Beringian | 31 (23.7%) | 3 | 34 (22.5%) | 33 (22.6%) | 1 | 34 (22.7%) |
| 4. Nearctic excluding East Beringia | 4 (3.1%) | 1 | 5 (3.3%) | | | |
| 5. Holarctic including Beringian | 74 (56.5%) | 11 | 85 (56.3%) | 86 (58.9%) | 1 | 87 (58.0%) |
| Other (introduced from South America) | – | – | – | 1 (0.7%) | – | 1 (0.7%) |
| Totals | 131 (100%) | 20 | 151 (100%) | 146 (100%) | 4 | 150 (100%) |

Alaskan species not expected in Yukon: 16 (of which 4 included in above numbers for East Beringia).

Total for Yukon + Alaska (excluding Panhandle): 167 species or subspecies (163 confirmed + 4 expected).

The proportion of species in the different biogeographic categories (Table 1) allows me to comment on the significance of separating the Palaeartic and Nearctic regions at the Bering Strait. According to present data the anthomyiid fauna of East Beringia contains a modest excess of Nearctic including East Beringian (category 3) over Palaeartic-East Beringian (category 2) species/subspecies (34 and 17 respectively, that is 22.7% and 11.3% of the fauna). However, this statistic is biased by the fact that anthomyiids have been intensively collected in Alaska and northern Canada but very little in Siberia. If I had been writing this article 15 years ago, I would have included the 5 species in category 5c (East Palaeartic-Nearctic Boreal/Cordilleran) in the Nearctic including East Beringian list. We must expect that further study of Siberian anthomyiids will show that additional species currently recorded only from North America also have East Palaeartic ranges¹. Thus it is uncertain whether the present excess of Nearctic including East Beringian over Palaeartic-East Beringian species is significant. What is most striking about the data and undoubtedly significant is that more than half the species are already known to have Holarctic distributions. I conclude from this that at the latitude of the Yukon Territory (above 60°N) the distinction between the Palaeartic and Nearctic regions has much less biotic significance than at lower latitudes. Beringia is to a large degree transitional between the Nearctic and Palaeartic regions, while at the same time representing a distinct biogeographic subunit on account of the presence of endemic biota. The concept of a unitary Holarctic region containing a Beringian subregion accords better with the anthomyiid data here presented than the customary separation of Palaeartic and Nearctic regions at the Bering Strait.

It is instructive to compare the anthomyiid data with that previously published for carabid beetles by Lindroth (1979) and noctuid moths by Lafontaine and Wood (1988), both being diverse groups with numbers of Beringian species comparable with those of

¹ Footnote added in proof. This prediction is already confirmed by the discovery of *Alliopsis attenuata* (53) (Aborigin Station on Upper Kolyma R., 26–30 July 1990, 500 m, D.M. Wood) and *Delia garretti* (105) (Cherskiy, Yakutia, 11–24 July 1990, D.M. Wood) in eastern Siberia according to information received from Mr. Michael Ackland.

Anthomyiidae. Lindroth did not separate the Palaearctic-East Beringian from truly Holarctic including Beringian species, categorizing all as “holarctic”. The proportion of East Beringian anthomyiids which are Holarctic in Lindroth’s wide sense is 69.3% (categories 2 + 5 in last column of Table 1). This is significantly higher than the value of 50% given by Lindroth for the Carabidae of the interior (Beringian, in part) section of Alaska. Lafontaine and Wood’s data for noctuid moths refers both to East and West Beringia. If we remove Beringian endemic species from their “holarctic” total, the proportion of remaining Holarctic species (59 out of 245) is 24.1%. This is the figure to be compared with Lindroth’s figure of 50% for Carabidae and my figure of 69.3% for the Anthomyiidae. The reason for the much lower value is evidently the lower proportion of Holarctic species in the noctuid fauna of boreal and boreomontane forest.

I suggest that the significantly higher Holarctic element in the anthomyiid fauna of East Beringia may be the result of a greater dispersal ability of these flies compared with carabid beetles or noctuid moths, resulting in more efficient recolonization after climatic changes and relatively lesser effectiveness of geographic barriers in restricting gene flow. The existing water gaps in the Bering Strait are almost certainly insufficient to act as a barrier to regular dispersal of flies occurring in adjacent land areas. The total distance across the strait is about 90 km (Lindroth 1960), but the presence of the Diomed Islands makes the minimal water gaps about half this. Such a distance is well within the flight range in still air calculated for many Diptera on physiological grounds by Hocking (1953: 294). Confirmation that anthomyiids readily disperse by active flight across open water is provided by Heydemann’s (1967) data for insects arriving at lightships in the North and Baltic Seas. Heydemann found that overwater dispersal of actively flying flies, such as Anthomyiidae, occurred under conditions of low wind velocity, and that flies arrived in good condition after flights of at least 30 km and would have been able to colonize suitable habitat. Furthermore, he reported that only about 70% of the species emanated from adjacent coasts, the remainder from more remote inland habitats. Among the Diptera, the Anthomyiidae were the third most abundant family (exceeded only by the Syrphidae and Muscidae).

More detailed analysis of the origin and relationships of the interesting Beringian element in the anthomyiid fauna must await studies of the presently unknown fauna of Siberian West Beringia. My anthomyiid data are inferior to those presented, for instance, by Lafontaine and Wood (1988) for noctuid moths because of lack of information on the West Beringian fauna and lack of habitat information for many species. Nevertheless, the data are sufficient to show significant differences between these groups with respect to the proportion of wide-ranging Holarctic species. The Anthomyiidae may be recommended for inclusion in biogeographic studies as a group representative of insects with a high potential for active aerial dispersal.

Acknowledgements

I am grateful to Dr. Fan Z.-D. and Mr. D.M. Ackland for supplying records of anthomyiids in China and Mongolia. Constructive comments on a first draft of this paper were provided by Mr. J.A. Downes and Dr. R.S. Anderson.

References

- Griffiths, G.C.D. 1982–93. Anthomyiidae. *Flies of the Nearctic Region* 8 (2), Nos. 1–10. 1632 pp.
 Heydemann, B. 1967. Der Überflug von Insekten über Nord- und Ostsee nach Untersuchungen auf Feuerschiffen. *Dt. ent. Z.* 14:185–215.

- Hocking, B. 1953. The intrinsic range and speed of flight of insects. *Trans. R. ent. Soc. Lond.* 104:223–345, 6 plates.
- Hopkins, D.M. 1967. The Cenozoic history of Beringia - a synthesis. pp. 451–484 in D.M. Hopkins (Ed.), *The Bering Land Bridge*. Stanford University Press, Stanford. 495 pp.
- Hockett, H.C. 1965. The Muscidae of Northern Canada, Alaska and Greenland (Diptera). *Mem. ent. Soc. Can.* 42. 369 pp.
- Lafontaine, J.D. and D.M. Wood. 1988. A zoogeographic analysis of the Noctuidae (Lepidoptera) of Beringia, and some inferences about past Beringian habitats. pp. 109–123 in J.A. Downes and D.H. Kavanaugh (Eds.), *Origins of the North American Insect Fauna*. *Mem. ent. Soc. Can.* 144. 168 pp.
- Lindroth, C.H. 1960. Verbindungen und Barrieren in der zirkumpolaren Verbreitung der Insekten. *Verh. 11. Int. Kongr. Ent.* (Wien 1960) 1:438–445.
- Lindroth, C.H. 1979. The importance of Beringia as reflected in the present fauna. pp. 349–354 in T.L. Erwin, G.E. Ball, and D.R. Whitehead (Eds.), *Carabid Beetles: Their Evolution, Natural History and Classification*. Junk, The Hague. 635 pp.
- Matthews, J.V., Jr., and A. Telka. 1997. Insect fossils from the Yukon. pp. 911–962 in H.V. Danks and J.A. Downes (Eds.), *Insects of the Yukon*. Biological Survey of Canada (Terrestrial Arthropods), Ottawa.
- Yurtsev, B.A. 1972. Phytogeography of Northeastern Asia and the problem of transberingian floristic interrelations. pp. 19–54 in A. Graham (Ed.), *Floristics and Paleofloristics of Asia and Eastern North America*. Elsevier, Amsterdam and New York. 278 pp.