

# Diptera (Flies) of Attu: The first assessment of the entomofauna of the last place on earth

[Diptera (die Fliegen) von Attu: Eine erste Begutachtung der Entomofauna vom „letzten“ Ort der Welt]

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<b>Abstract</b>	The first collections of flies (Diptera) from Attu Island are reported, including two species not previously known from North America. Several beetles and a bee are reported as well. This collection suggests Attu is a unique source area for Nearctic biodiversity, which warrants further exploration.
<b>Key words</b>	Diptera, faunistics, Nearctic, Attu, Aleutian Islands, Alaska, U.S.A., Coleoptera, Carabidae
<b>Zusammenfassung</b>	Es wird über die ersten Aufsammlungen von Zweiflüglern (Diptera) von der Insel Attu berichtet. Dabei erwiesen sich zwei Arten als neu für die Fauna Nordamerikas. Einige Käfer und eine Hummelart wurden ebenfalls festgestellt. Das Material deutet an, dass Attu eine besondere Quelle nearktischer Biodiversität darstellt, die weiterer Untersuchungen bedarf.
<b>Stichwörter</b>	Diptera, Faunistik, Nearktis, Attu, Aleuten, Alaska, USA, Coleoptera, Carabidae

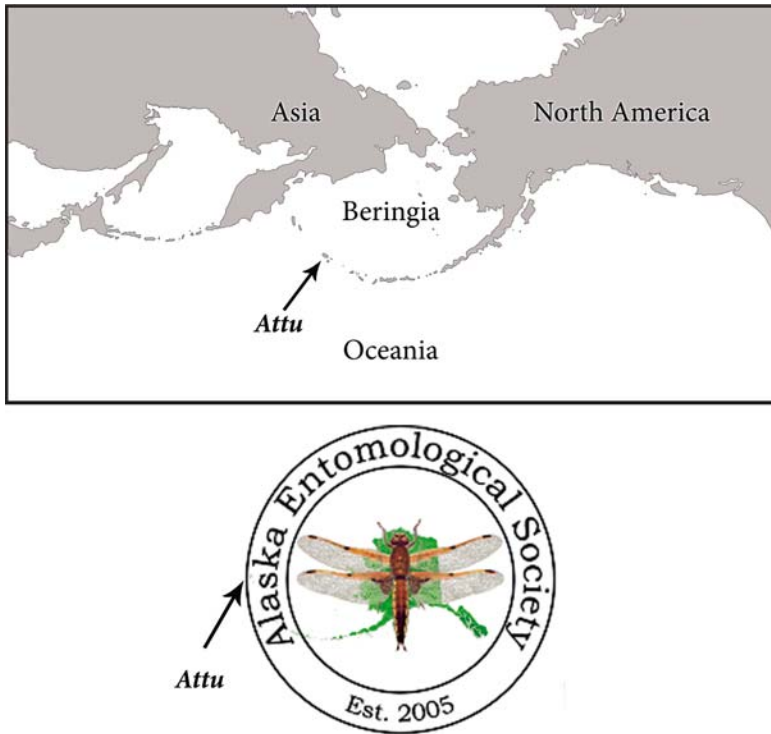
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## Introduction

Biodiversity is now recognized by most nations as a critical resource to be treasured, augmented, and used sustainably (CONVENTION ON BIODIVERSITY 1994). Today, the United States of America is the dominant power in the world, but neither recognizes and appreciates its biodiversity nor joins other nations in doing so. Individuals, however, remain free to disagree with official policy and to contribute to alternative views. So, we offer this first and preliminary assessment of the entomological fauna of a unique area of the United States of America.

Attu is the last island in the Aleutian chain (Fig. 1) and, therefore, is the western most point from Washington (or Greenwich, England), but, as the world was divided into hemispheres along the 180° median, Attu is the only part of United States that falls into the Eastern Hemisphere (centered at 172.9° East, 52.9° North). So, in one sense, Attu is the eastern and western most area of the United States, and, also, for this reason Attu is called the last place on earth, as it is officially the last place on earth that the sun rises and sets on each day [Official time on Attu follows Hawaiian-Aleutian standard time even though it should be in another time-zone and one day beyond the time in Hawaii].

Due to its unique position near Asia, Attu for years has attracted bird watchers, as during migration birds of the Old World (Palearctic region) are commonly found to pass through (WATTERS 2003). The flora has also been found to have distinct Old World components (MEYERS 2003). Surprisingly, no one has ever examined the fly fauna of the island. Independently and in association with bird watching expeditions, we both visited Attu. Our results are summarized below. This, however, is clearly a preliminary report as we were both very limited in time and resources. So, additional expeditions to this critical output of USA diversity are needed, especially later in the season (July and August).



**Fig. 1:** Map of northeastern Asia and northwestern North America, showing the position of Attu. The seal of the Alaska Entomological Society showing the position of Attu “on the edge.”

Prior work on the Alaskan insect fauna is minimal (SAILER 1954). Despite the fact that the state of Alaska contains the northern most point of the United States of America (Point Barrow) and the western / eastern most points (Attu / Amchitka in the Aleutians) and virtually all of the arctic fauna of the country, little has been published to document this unique entomological fauna [as opposed to Canada, which has a well-documented survey of its arctic fauna (DANKS 1981a, b)].

In terms of the Alaskan islands, the only publications are a series on the insects of the Pribilof Islands (HANNA et al. 1921; McATEE 1923; Diptera covered by ALEXANDER 1921 and 1923, MALLOCH 1921 and 1923 and WALTON 1923). There was an early report on the Diptera of the Commander Islands (COQUILLETT 1899). In the geographic index of the bibliography of Nearctic Arctic arthropods (DANKS 1981b), there are no entries for the Aleutians, only the Pribilofs. As far as we been able to determine only one entomologist, Carl H. LINDROTH, has ever collected on Attu (BALL 1961: 19, LINDROTH 1969: X) and that was only a few short days in 1958 and only for carabid beetles.

### Methods (Figs 2–7)

As we were part of bird watching groups, no organized and systematic entomological collecting was possible (such as Malaise or pan traps, stream screens, etc.). Sampling was limited to hand-netting. Voucher specimens were prepared following standard procedures and are deposited in the National Entomological Collection, Smithsonian Institution. No attempt was



2	3
4	5
6	7

**Figs 2–7:** Attu. – 2: Looking across Massacre Bay from the southwest to Gilbert Ridge; – 3: Massacre (Debris) Beach from the southwest; – 4: Kelp beds on South Beach; – 5: Infracation Creek near base of Weston Mountain; – 6, 7: Spring flowers: *Rubus chamaemorus* LINNAEUS (6) AND *Potentilla villosa* PALLAS (7).

made to get identifications of non-Diptera, but we list family level determinations of them, so future workers will know that vouchers are available.

Attu is a relatively small island (40 miles long, east to west; 20 miles wide, north to south) and the areas which people can easily access are limited and restricted to the eastern end. Attu still maintains a full-functional Coast Guard LORAN Station and the areas around the station are under its control, the rest of the island is a wilderness area maintained by US Fish and Wildlife Service.

We here summarize where each of us collected. In the species list only who the collector was and who made the determination are indicated. Notes are added as necessary to highlight the significance of the collection.

THOMPSON collected flies from 11–13 June 2000 on Attu as part of an Attou birding group (see WATTERS 2003) and mainly around the developed areas on the eastern side. The time was early spring and very few flowers were in bloom, mainly *Salix catkins*. Most of the diversity collected was from the wracks of kelp on South Beach (Fig. 4). *Coelopa*, *Fucellia*, *Scathophaga* and *Thoracochaeta* species were collected on or around these wracks. EPLER spent an afternoon (26 July) collecting midges in the Massacre Bay area (Figs 2, 3) as part of a brief survey of the Bering Sea Islands in 2001. Overall, we document 36 species, of which 2 (*Psectrocladius sordidellus* and *Chironomus* “*annularius sensu EDWARDS*”) are recorded for the first time from North America. Needless to say, more collecting will no doubt produce many more species. As many flies are flower visitors the ideal time would be in late July and early August when the floral bloom is at the maximal, especially *Angelica* and *Heracleum*. In early spring only few flowering plants were found as eg. *Rubus chamaemorus* LINNAEUS and *Potentilla villosa* PALLAS (Figs 6, 7).

## Species list

### DIPTERA

#### Agromyzidae

*Phytomyza* spec. One female (THOMPSON / NORRBOM). Unfortunately, male specimens are necessary for species determinations.

#### Anthomyiidae

*Botanophila glauca* (COQUILLET). One male (THOMPSON / GRIFFITHS). Described from the Alaskan panhandle (Farragut Bay) and subsequently recorded from the Pribilofs (HUCKETT 1965a: 30, 1965b: 844). This new combination will be treated in the next fascicle of the Flies of the Nearctic Region (GRIFFITHS, in litt.).

*Delia prostriata* (HUCKETT). (THOMPSON / GRIFFITHS). Twelve males, two females. This fly is closely related to *lupini* COQUILLET and probably feeds on lupines. GRIFFITHS (1993: 1486) had previously studied only two males (Alaska, British Columbia).

*Pegomya tinctisquama* HUCKETT. One male (THOMPSON / GRIFFITHS). The species ranges from Alaska to southern California (GRIFFITHS 1982: 78). The larvae are leaf-miners on lupines (*Lupinus nootkatensis* DONN is common on Attu and a known host plant).

*Fucellia fucorum* (FALLÉN). Nine males, 27 females (THOMPSON / THOMPSON). *Fucellia* are called kelp flies but are predators of other flies that feed on the kelp. *Fucellia fucorum* is known from across northern Europe, Russia, Japan, Bering Sea and Alaska, but is apparently absent from arctic Canada (ALDRICH 1918: 164; HUCKETT 1965a: 26, 1965b: 842; DELY-DRAKOVITS 1993: 58)

#### Chironomidae

##### Podonominae

*Parochlus kiefferi* (GARRETT). One female (THOMPSON / EPLER). A Holarctic, high-latitude/elevation species. Not recorded for Kamchatka or the Russian Far East by MAKARCHENKO et al. (1997, 2005).

##### Diamesinae

*Pseudodiamesa branickii* (NOWICKI). Two males (THOMPSON / EPLER). A widespread Holarctic, high-latitude/elevation species, found throughout the Far East. It was recorded from Kamchatka by MAKARCHENKO (1996) and MAKARCHENKO et al. (1997), but not listed for Kamchatka in MAKARCHENKO et al. (2005). Also known from the western United States and Canada (OLIVER et al. 1990).

##### Orthoclaadiinae

*Psectrocladius sordidellus* (ZETTERSTEDT). 18 males and females (THOMPSON / EPLER). A Palaearctic species, not recorded from the Nearctic. Recorded from several localities in the Russian Far East, but not from Kamchatka, by MAKARCHENKO et al. (2005).

*Psectrocladius* spec. One female (EPLER / EPLER). This single, damaged specimen may be *Psectrocladius octomaculatus* WÜLKER, a Palaearctic taxon recently recorded from Colorado (OLIVER & DILLON 1994). The Nearctic members of the genus *Psectrocladius* are badly in need of revision.

*Thalassosmittia clavicornis* (SAUNDERS). Four males, one female (EPLER / EPLER). *Thalassosmittia* species are marine shoreline inhabitants. The two species collected on Attu were the only marine midges encountered. No *Thalassosmittia* species were recorded from Kamchatka by MAKARCHENKO et al. (1997, 2005).

*Thalassosmittia pacifica* (SAUNDERS). Two males, four females (THOMPSON / EPLER). Both *Thalassosmittia* species collected on Attu were previously recorded from the western coast of North America, from British Columbia to California (OLIVER et al. 1990). Neither species is recorded from the Russian Far East by MAKARCHENKO et al. (2005).

### Chironominae

*Chironomus* “*annularius*” (DE GEER) (*sensu* EDWARDS (1929) and PINDER (1978). 58 males and females (THOMPSON / EPLER).

The nomenclature and taxonomy of the *Chironomus plumosus* complex remains confused. SPIES & SAETHER (2004: 32, 35) have reviewed the situation well. The name *Tipula annularis* DE GEER (1776: 379) has been used by various authors (such as MEIGEN 1804: 12, 1818: 21), but under the current rules of nomenclature is invalid and is an objective synonym of *Tipula plumosus* (LINNAEUS, 1758). The species described by DE GEER may or may not be the same as the one described by LINNAEUS, as the taxonomy of the complex remains confused. However, I (JHE) follow PINDER (1978: 112), which is based on EDWARDS (1929: 384). The Attu midges appear to be the same taxon that he referred to as “*Chironomus annularius* (DE GEER) *sensu* EDWARDS”. This is the first record for this taxon from the Nearctic region. Note that “*Chironomus annularius* Mg.” is recorded from Kamchatka by MAKARCHENKO et al. (1997), but the taxon is not listed in MAKARCHENKO et al. (2005).

*Chironomus riparius* (MEIGEN). Two males (EPLER / EPLER). A common and widespread Holarctic species. Not recorded from Kamchatka by MAKARCHENKO et al. (1997, 2005).

*Polypedilum pedatum* TOWNES. One male (THOMPSON / EPLER); three males, one female (EPLER / EPLER). Widespread in the mid to northern Nearctic (MASCHWITZ & COOK 2000). This was the only species collected by both authors. Recorded from the Russian Far East, but not Kamchatka, by MAKARCHENKO et al. (2005).

*Micropsectra polita* (MALLOCH). One male (THOMPSON / EPLER). Widespread in the Nearctic. Not recorded from the Russian Far East by MAKARCHENKO et al. (1997, 2005).

*Micropsectra recurvata* GOETGHEBUER. Nineteen males, two females (THOMPSON / EPLER). A Holarctic species, not recorded from the Russian Far East by MAKARCHENKO et al. (1997, 2005).

Of the midges, two of the taxa, *Psectrocladius sordidellus* and *Chironomus* “*annularius*”, could be considered new for the “Nearctic”. None of the taxa recorded from the Pribilofs by MALLOCH (1923) was collected on Attu. Eight of the ten species we collected on Attu have not been recorded from Kamchatka; six of the ten species have not been recorded from the Russian Far East.

### Coelopididae

*Coelopa nebularum* ALDRICH. Two males, two females (THOMPSON / MATHIS)

*Coelopa stejneri* ALDRICH. One female (THOMPSON / MATHIS)

*Coelopa vanduzeei* CRESSON. One male, one female (THOMPSON / MATHIS)

All of these kelp flies have similar biologies, the larvae feed on rotting kelp, and ranges, from Alaska along the coast to southern California. *Coelopa nebularum* also occurs along the northwest Pacific coast to Japan. They are restricted to the Pacific Ocean fringe (MATHIS & McALPINE 2006).

### Drosophilidae

*Scaptomyza trochanterata* COLLIN. One male, one female (THOMPSON / MATHIS). This is a Holarctic species, originally described from Scotland. Our specimens, however, are the atypical form with a narrow, dark apical wing cloud (see WHEELER & TAKADA 1966: 62).

### Ephydriidae

*Scatella setosa* COQUILLET. One male, one female (THOMPSON / MATHIS). This species was described from Alaska and is widespread across the United States (MATHIS & ZATWARNICKI 1995: 266).

### Heleomyzidae

*Heleomyza* spec. One female (THOMPSON / MATHIS). This specimen belongs to a species group (*czernyi* COLLART, *modesta* MEIGEN and *tristissima* GARRETT) in which the species are only separated by characters of the male genitalia (GILL 1962: 591). *Heleomyza tristissima* has been recorded from Alaska; *H. czernyi* is known from Europe and Greenland and *H. modesta* is also European.

*Scolioecentra fraterna* LOEW. One female (THOMPSON / MATHIS). Originally described from Sitka, Alaska, now known to be widespread from Alaska to Greenland, south to British Columbia, Colorado and New York. In the USNM there is a long series from St George and St Paul along with 2 specimens from Adak and 2 from Umnak in the Aleutians.

### Muscidae

*Phaonia rugia* (WALKER). Two females (THOMPSON / THOMPSON). This species is widespread in the north and extends south to Utah and Colorado (HUCKETT 1965a: 319, 1965b: 907).

### Scathophagidae

*Scathophaga crinata* COQUILLET. Five males, five females (THOMPSON / THOMPSON). Originally described from Bering Island (COQUILLET 1901: 612) and later recorded from the Pribilof Islands (MALLOCH 1923: 205), but otherwise not known outside of the Bering Sea area.

*Scathophaga frigida* COQUILLET. Six males, 10 females (THOMPSON / THOMPSON). *Scathophaga frigida* was described from Kukay Bay and Popof Island in the Alaskan panhandle (COQUILLET 1900: 454) and is apparently only known from the eastern side of the Bering Sea south to central California (VOCKEROTH 1965: 838; GORODKOV 1986). MALLOCH (1923) did not list it from the Pribilofs.

### Sciaridae

One female, not identified to genus or species level (THOMPSON).

### Sphaeroceridae

*Thoracochaeta arnaudi* (RICHARDS). One male, three females (THOMPSON / MARSHALL). Alaska to Baja California; previously not known further north than British Columbia (MARSHALL 1982: 66).

*Thoracochaeta seticosta* (SPULER). One male, one female (THOMPSON / NORRBOM). Holarctic, but probably originally restricted to the northern Pacific (MARSHALL 1982: 72; ROHÁČEK & MARSHALL 2000: 359).

### Trichoceridae

*Trichocera japonica* MATSUMURA. Three males, one female (THOMPSON / THOMPSON). I (FCT) follow the taxonomy of DAHL (1967b) and DAHL & ALEXANDER (1976) and recognize *japonica* as a Holarctic (circumpolar, subarctic) species, not the splitting taxonomy of STARÝ & MARTINOVSKY (1996).

## COLEOPTERA

### Carabidae

*Amara torrida* PANZER. Two specimens (THOMPSON / ERWIN)

*Pterostichus (Bothriopterus) adstrictus* ESCHSCHOLTZ. One specimen (THOMPSON/ ERWIN)

**Gyrinidae***Gyrinus opacus* SAHLBERG. Three specimens (THOMPSON / STEINER)**Staphylinidae**

One specimen, not identified to genus or species level (THOMPSON)

**HYMENOPTERA****Bombidae***Bombus* spec. One specimen (THOMPSON)**Acknowledgments**

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**Literature**

- ALDRICH, J. M. (1918): The kelp-flies of North America (Genus *Fucellia*, Family Anthomyiidae). – Proceedings of the California Academy of Sciences (4th series) **8**: 157–179.
- ALEXANDER, C. P. (1921): Dipterous insects of the family Tipulidae from the Pribilof Islands, Alaska. – pp. 183–184 in: HANNA, G. D. et al. (q.v.).
- ALEXANDER, C. P. (1923): Diptera. Suborder Orthorrhapha. Division Nematocera. Families Tipulidae and Rhyphidae. – North American Fauna **46**: 159–169, pl. X–XI.
- BALL, G. E. (1981): Carl H. LINDROTH: Contributions of a Swedish naturalist to systematics and biogeography in North America. – Entomologica Scandinavica, Supplement **15**: 17–32. [1981.07.01]
- COLE, F. R. (1921): Diptera from the Pribilof Islands, Alaska. – pp. 169–177 in: HANNA, G. D. et al. (q.v.).
- CONVENTION ON BIOLOGICAL DIVERSITY (1994): Convention on biological diversity. Text and Annexes. – 34 pp. UNEP/CBD/94/1, Geneva.
- COQUILLET, D. W. (1899): Order Diptera. – pp. 341–346 in: ASHMEAD, W. H.: Reports upon the insects, spiders, mites, and myriapods collected by Dr. L. STEJNEGER and Mr. G. E. H. BARRETT-HAMILTON on the Commander Islands. – pp. 328–351 in: JORDAN, D. S.: The fur seals and fur-seal islands of the North Pacific Ocean. Vol. 4, 384 pp., 86 pls., Pl. A. "1898," Washington
- COQUILLET, D. W. (1900): Papers from the HARRIMAN Alaska Expedition. IX. Entomological results (3): Diptera. – Proceedings of the Washington Academy of Sciences **2**: 389–464.
- COQUILLET, D. W. (1901): New Diptera in the U. S. National Museum. – Proceedings of the U. S. National Museum **23**: 593–618.
- DAHL, C. (1967a): Notes on Arctic and Subarctic Trichoceridae (Dipt. Nem.) from Canada, Alaska and Greenland. – Opuscula Entomologica **32**: 49–78.
- DAHL, C. (1967b): Additional notes on the taxonomy and distribution of Swedish Trichoceridae. – Opuscula Entomologica **32**: 188–200.
- DAHL, C. & ALEXANDER, C. P. (1976): World catalogue of Trichoceridae KERTÉSZ, 1902 (Diptera). – Entomologica Scandinavica **7**: 7–18.
- DANKS, H. V. (1981a): Arctic Arthropods. A review of systematics and ecology with particular reference to the North America fauna. — Entomological Society of Canada, Ottawa. [vi] + 608 pp.
- DANKS, H. V. (1981b): Bibliography of the Arctic Arthropods of the Nearctic Regions. – Entomological Society of Canada, Ottawa. [iv] + 125 pp.
- DE GEER, C. (1776): Mémoires pour servir à l'histoire des insectes. – Stockholm, Sweden **6**: 523 pp. + 30 pls.
- DELY-DRASKOVITS, A. (1993): Family Anthomyiidae. – pp. 11–102 in: Soós, A. (Ed.): Catalogue of Palaearctic Diptera **13**: 624 pp., Anthomyiidae – Tachinidae. Hungarian Natural History Museum, Budapest. 624 pp.
- EDWARDS, F. W. (1929): British non-biting midges (Diptera, Chironomidae). – Transactions of the Entomological Society of London **77**: 279–430.

- GILL, G. D. (1962): The heleomyzid flies of America north of Mexico (Diptera: Heleomyzidae). – Proceedings of the United States National Museum **113** [3465]: 495–630.
- GRIFFITHS, G. C. D. (1982): Cyclorhapha II (Schizophora: Calyptratae) Anthomyiidae. – Flies of the Nearctic Region **8**(2) [1]: 1–160.
- GRIFFITHS, G. C. D. (1993): Cyclorhapha II (Schizophora: Calyptratae) Anthomyiidae. – Flies of the Nearctic Region **8**(2) [10]: 1417–1632. [1982.05]
- HANNA, G. D.; ALEXANDER, C. P.; COLE, F. R.; FRISON, T. H.; MACGILLIVRAY, A. D.; MALLOCH, J. R.; VAN DUZEE, E. P.; VAN DUZEE, M. C. & VAN DYKE, E. C. (1921): Insects of the Pribilof Islands, Alaska. – Proceedings of the California Academy of Sciences (series 4) **11**: 153–195.
- HUCKETT, H. C. (1965a): The Muscidae of North Canada, Alaska, and Greenland (Diptera). – Memoirs of the Entomological Society of Canada **42**: 369 pp.
- HUCKETT, H. C. (1965b): Subfamily Fucelliinae. – pp. 842–843 in: STONE, A.; SABROSKY, C. W.; WIRTH, W. W.; FOOTE, R. H. & COULSON, J. R. (Eds): A catalog of Diptera of America north of Mexico. United States Department Agriculture, Handbook **276**: 1696 pp.
- LINDROTH, C. H. (1963): The Aleutian Islands as a route for dispersal across the North Pacific. – pp. 121–131 in GRESSITT, J. L. (Ed.): Pacific Basin Biogeography. A symposium. Bishop Museum Press. Honolulu, Hawai'i. x + 563 pp.
- LINDROTH, C. H. (1969): The ground-beetles (Carabidae, excl. Cicindelinae) of Canada and Alaska. Part 1. – Opuscula Entomologica, Supplementa **35**: I–XLVIII.
- MCAATEE, W. L. (1923): Introduction to the insects, arachnids, and chilopods of the Pribilof Islands, Alaska. – North America Fauna **46**: 129–138.
- MAKARCHENKO, M. A. (1996): A checklist of the subfamily Diamesinae (Diptera, Chironomidae) of the Far East. – Makunagai [Acta Dipterologica] **19**: 1–16.
- MAKARCHENKO, M. A., MAKARCHENKO, E. A. & VVEDENSKAJA, T. L. (1997): A preliminary chironomid list (Diptera, Chironomidae) of the Kamchatka Peninsula and bordering territories. – Far Eastern Entomologist **40**: 1–7.
- MAKARCHENKO, M. A., MAKARCHENKO, E. A., ZORINA, O. V. & SERGEEVA, I. V. (2005): Preliminary data on fauna and taxonomy of chironomids (Diptera, Chironomidae) of the Russian Far East. – Vladimir Ya. LEVANIDOV'S Biennial Memorial Meetings **3**: 394–420.
- MALLOCH, J. R. (1921): Dipterous insects of the family Anthomyiidae from the Pribilof Islands, Alaska. – pp. 178–182 in: HANNA, G. D. et al. (q.v.).
- MALLOCH, J. R. (1923): Diptera. (Except Tipulidae, Rhyphidae, and Calliphoridae). – North American Fauna **46**: 170–227, pls. 12–15.
- MARSHALL, S. A. (1982): A revision of the Nearctic *Leptocera* (*Thoracochaeta* DUDA) (Diptera: Sphaeroceridae). – The Canadian Entomologist **114**: 63–78.
- MARSHALL, S. A. & ROHÁČEK, J. (2000): A world revision of the seaweed fly genus *Thoracochaeta* DUDA (Diptera: Sphaeroceridae: Limosiniinae). Part 1: extra-Holarctic species. – Studia dipterologica **7**: 259–311.
- MASCHWITZ, D. E. & COOK, E. F. (2000): Revision of the Nearctic Species of the Genus *Polypedilum* KIEFFER (Diptera: Chironomidae) in the Subgenus *P. (Polypedilum)* KIEFFER and *P. (Urespedilum)* OYEWO and SAETHER. – Ohio Biological Survey Bulletin (N. S.) **12**(3): vii + 135 pp.
- MATHIS, W. N. & McALPINE, D. K. (2008): Family Coelopidae. – Myia **12**: [In press]
- MATHIS, W. N. & ZATWARNICKI, T. (1995): World catalog of shore flies (Diptera: Ephydriidae). – Memoirs on Entomology, International **4**: 423 pp.
- MEIGEN, J. W. (1804): Klassifikation und Beschreibung der europäischen zweiflügeligen Insekten (Diptera LINN.). – Braunschweig 1 Abt. 1: XXVIII + 1–152, Abt. 2: VI + 153–314.
- MEIGEN, J. W. (1818): Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten. – Volume 1, xxxvi + 332 + [1] pp., 11 pls.; Aachen: F. W. Forstmann.
- MEYERS, R. (2003): The flora of Attu – A brief overview. – Pp. 21–25 in: WATTERS, C. (Ed.): Attu: Birding on the Edge. A quarter century of birding the western reaches of North America. x + 214 pp.
- OLIVER, D. R. & DILLON, M. E. (1994): Corrections and additions to (A catalog of Nearctic Chironomidae). – Proceedings of the Entomological Society of Washington **96**: 8–10.
- OLIVER, D. R., DILLON, M. E. & CRANSTON, P. S. (1990): A catalog of Nearctic Chironomidae. – Research Branch, Agriculture Canada. Publication 1857/B. 89 pp.
- PINDER, L. C. V. (1978): A key to adult males of the British Chironomidae (Diptera). the non-biting midges. – Freshwater Biological Association. Science Publication No. **37**: 169 pp + 189 figs.
- ROHÁČEK, J. & MARSHALL, S. A. (2000): A world revision of the seaweed fly genus *Thoracochaeta* DUDA (Diptera: Sphaeroceridae: Limosiniinae). Part 2: Palaearctic species. – Studia dipterologica **7**: 313–372.
- PRATT, H. (2003): The winter crane flies of North America north of Mexico (Diptera: Trichoceridae). – Proceedings of the Entomological Society of Washington **105**: 901–914.
- SAILER, R. I. (1954): Invertebrate research in Alaska. – Arctic **7**: 266–274.



- SPIES, M. & SAETHER, O. A. (2004): Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). – *Zootaxa* **752**: 90 pp.
- STARÝ, J. & MARTINOVSKÝ, J. (1996): Little-known and new *Trichocera* s. str., related to *T. implicata* and revised checklist of the Czech and Slovak Trichoцерidae (Diptera). – *Entomological Problems* **27**: 151–166.
- SUBLETTE, J. E. & SUBLETTE, M. E. (1965): Family Chironomidae (Tendipedidae). – Pp. 142–181 in: STONE, A., SABROSKY, C. W., WIRTH, W. W.; FOOTE, R. H. & COULSON, J. R. (Eds): A catalog of Diptera of America north of Mexico. United States Department of Agriculture, Handbook **276**: 1696 pp.
- VAN DUZEE, M. C. (1921): A new species of the dipterous family Dolichopodidae from the Pribilof Islands, Alaska. – Pp. 167–168 in: HANNA, G. D. et al. (q.v.).
- WALTON, W. R. (1923): Diptera. Suborder Cyclorrhapha, Division Schizophora. Family Calliphoridae. – *North American Fauna* **46**: 229.
- WATERS, C. (Ed.) (2003): *Attu: Birding on the Edge. A quarter century of birding the western reaches of North America*. x + 214 pp.
- WHEELER, M. R. & TAKADA, H. (1966): The Nearctic and Neotropical species of *Scaptomyza* HARDY (Diptera: Drosophilidae). – *The University of Texas Publication* 6615 [Studies in Genetics. III]: 37–78.

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