

The Braconidae (Hymenoptera) of Greenland

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Thirty species belonging to 16 genera of the family Braconidae (Hymenoptera) are reported from Greenland. Seven are new species described and illustrated below: *Dacnusa groenlandica* spec. nov.; *Aphidius tarsalis* spec. nov.; *Praon brevistigma* spec. nov.; *Blacus* (B.) *groenlandicus* spec. nov.; *Cotesia crassifemorata* spec. nov.; *C. fascifemorata* spec. nov. and *Microplitis lugubroides* spec. nov.

Introduction

Little is known about the fauna of Braconidae from Greenland. Among the eight primary papers on Braconidae from Greenland there is only one fairly recent paper (Papp, 1989). In addition Papp (1984) lists the Greenland species of the genus *Microplitis* Foerster, but this paper is focused on the European fauna. Up to now eight genera and 16 species are recorded from Greenland (Yu et al. 2005), but three of the supposed species are misidentifications. The author was asked to produce the chapter on Braconidae in the "Identification Handbook of the Insects and Arachnids of Greenland" (the "Greenart-project") and a large collection of Braconidae present in the Zoological Museum, University of Copenhagen was made available to him by Dr L. Vilhelmsen. Despite the fact that most of the material is in a suboptimal condition (with the exception of the material collected by T. Munk) it allowed the Braconidae of Greenland to be extensively studied. Obviously, a lot is still to be discovered considering that of some species only one specimen was present or that the whole series was collected by only one collector. The collection was considerably enlarged in 2003 during the entomological expedition to SW Greenland ("Kissavik Expedition") and by the collecting trip of Mr T. Munk in 2004.

In this paper 16 genera and 30 species are reported for Greenland, of which 9 (= 56%) and 17 (56%), respectively, are new to the fauna. In total seven species are considered new to science (= 23%) and are described below.

The terminology follows van Achterberg (1988). For additional information (synonyms, distribution, biology, etc.) of the described species, see the Taxapad database (Yu et al., 2005). Species with an asterisk are new to the fauna of Greenland. RMNH stands for the Nationaal Natuurhistorisch Museum, Leiden and ZMUC for Zoological Museum of the University of Copenhagen, Copenhagen.

Key to genera of Braconidae known from Greenland

1. Mandibles straight or curved outwards, their tips not touching when closed (fig. 13), and with 3 or 4 teeth or lobes; figs 3, 8, 17, 19): "exodont braconids") 2
Very large cosmopolitan subfamily Alysiinae, contains endoparasitoids of cyclorrhaphous Diptera.

- Mandibles curved inwards, their tips touching when closed (figs 21, 26), and with 2 teeth (fig. 151) 5
- 2. Vein r-m of fore wing absent (figs 9, 18) 3
- Vein r-m of fore wing present (figs 1, 6) 4
- 3. Setae of metapleuron partly directed dorsally and anteriorly; mandible with a more or less developed minute fourth tooth, if absent or obsolescent then central tooth enlarged (fig. 19) and hind coxa often with tufts of setae dorsally *Chorebus* Haliday, 1833
- Setae of metapleuron directed posteriorly; mandible with 3 teeth (fig. 17); hind coxa without tufts of setae dorsally *Dacnusa* Haliday, 1833
- 4. Third antennal segment slightly longer than fourth segment (fig. 5); vein 1-SR+M of fore wing present (fig. 6) *Alysia* Latreille, 1804
- Third antennal segment shorter than fourth segment (fig. 4); vein 1-SR+M of fore wing absent (fig. 1) *Aphaereta* Foerster, 1862
- 5. Hypoclypeal depression deep and wide, and middle of apparent ventral margin of clypeus distinctly above upper level of mandibular bases (figs 21, 26, 34); bottom of hypoclypeal depression consists of the concave labrum and usually a depressed part of clypeus ("cyclostome braconids") 6
- Hypoclypeal depression absent (figs 126, 134, 153), medio-ventral margin of clypeus close to upper level of mandibular bases (fig. 126); labrum flat and ventral part of clypeus not part of a hypoclypeal depression 8
- 6. Fore tibia with row of stout pegs or spines, which are at most as long as about 6 times their width (fig. 25); first metasomal tergite elongate (fig. 27); posterior flange of propleuron largely dorsally situated (fig. 28) *Spathius* Nees, 1819
Belongs to the large cosmopolitan subfamily Doryctinae containing ectoparasitoids, mainly of concealed larval Coleoptera.
- Fore tibia without row of pegs or spines (fig. 113), length of bristles at least about 8 times their width; first tergite robust (figs 23, 36); posterior flange of propleuron situated mainly subapically (fig. 24) or obsolescent 7
- 7. Second and third metasomal tergites largely membranous dorsally (fig. 23), nearly always less sclerotised than their epipleura; pedicellus nearly as long as scapus; inner sides of eyes hardly or not emarginate (fig. 21) *Hormius* Nees, 1819
Belongs to the small cosmopolitan subfamily Hormiinae s. str., which contains idiobiont ectoparasitoids of larvae of Lepidoptera.
- Second and third tergites similarly or more strongly sclerotised than their epipleura; pedicellus distinctly shorter than scapus (figs 30, 40); inner side of eyes distinctly emarginate (fig. 34) *Aleiodes* Wesmael, 1838
Belongs to the rather large cosmopolitan subfamily Rogadinae, which contains koinobiont endoparasitoids of larval Lepidoptera.
- 8. Vein SR1 of fore wing partly or completely unsclerotised, resulting in an open marginal cell distally (figs 41, 119, 155); metasoma often hardly longer than mesosoma 9
- Vein SR1 of fore wing completely sclerotised, tubular, reaching margin of wing, resulting in a closed marginal cell distally (figs 165, 172, 176); metasoma usually distinctly longer than mesosoma 15
- 9. Vein SR1 of fore wing completely unsclerotised (figs 41, 60, 67, 78); vein cu-a of hind

- wing present (fig. 98); scutellar sulcus with a median carina or crenulate; antenna with 18 segments 10
- Very large cosmopolitan subfamily Microgastrinae, containing endoparasitoids of larval Lepidoptera.
- Vein SR1 of fore wing basally sclerotised (figs 119, 127, 142, 155); vein cu-a of hind wing absent (fig. 119); scutellar sulcus smooth; number of antennal segments variable 12
- Rather small cosmopolitan subfamily Aphidiinae of endoparasitoids of adult and nymphal (= larval) aphids (Aphididae).
10. Hind coxa not surpassing level of apex of first metasomal tergite and less than twice as long as middle coxa; veins r-m and 3-CU1 of fore wing present (figs 41, 50); precoxal sulcus at least medially present *Microplitis* Foerster, 1862
 - Hind coxa distinctly surpassing level of apex of first metasomal tergite and at least about twice as long as middle coxa; veins r-m and 3-CU1 of fore wing absent (figs 78, 86, 94); precoxal sulcus usually absent medially 11
 11. Vein 1-SR of fore wing pointed to vein 1-CU1 or near vein cu-a (figs 68, 78); first metasomal tergite wide posteriorly, subparallel-sided and stout (fig. 74); if to vein 2-CU1 (fig. 94) then vein 1-SR hardly longer than wide (figs 86, 94) and propodeum usually strongly to coarsely reticulate and/or rugose; first discal cell of fore wing comparatively wide (fig. 94; 0.7-0.8 times higher than wide); scutellar sulcus distinctly crenulate medially; scutellum postero-laterally without distinct pit *Cotesia* Cameron, 1891
 - Vein 1-SR of fore wing usually pointed to vein 2-CU1 (fig. 97), if pointed to vein 1-CU1 or to vein cu-a (fig. 106: *P. pallipes*) then first tergite slender and narrowed posteriorly (figs 103); vein 1-SR slender and comparatively long (fig. 103) and propodeum largely smooth or finely sculptured; first discal cell of fore wing usually narrower (fig. 97); scutellar sulcus usually weakly crenulate or with obsolescent sculpture medially; scutellum postero-laterally with pit *Protopanteles* Ashmead, 1898
 12. Hind wing with a closed cell (fig. 119); vein M+CU of hind wing distinctly sclerotised (fig. 119); vein 1-SR+M of fore wing present, at least as a weakly pigmented trace (fig. 119); notauli complete *Praon* Haliday, 1833
 - Hind wing without closed cells; vein M+CU of hind wing unsclerotised, only pigmented; vein 1-SR+M of fore wing absent (figs 127, 133, 142); notauli usually absent on mesoscutal disc 13
 13. Veins m-cu and r-m of fore wing absent (fig. 127); genitalia of ♀ with prongs (fig. 130); vein r+3-SR+SR1 of fore wing comparatively long and strongly curved (fig. 127) and comparatively far removed from level of apex of pterostigma (fig. 127) *Trioxys* Haliday, 1833
 - Veins m-cu and r-m of fore wing present (figs 133, 155); genitalia of ♀ without prongs (fig. 131); vein r+3-SR+SR1 of fore wing medium-sized and slightly curved, near level of apex of pterostigma (figs 133, 142, 155); genus *Aphidius* Nees, 1818 14
 14. Head in dorsal view gradually narrowed posteriorly (fig. 150); face 1.1-1.7 times as wide as high (figs 134, 149); pronotum usually with shallow depressions; if rather deep then fifth tergite of ♀ largely glabrous subgenus *Aphidius* Nees, 1818

- Head in dorsal view directly narrowed posteriorly (fig. 154, sometimes less so in ♂); face about twice as wide as high (fig. 153); pronotum usually with pair of deep depressions; fifth tergite of ♀ rather extensively setose subgenus *Euaphidius* Mackauer, 1961
- 15. First metasomal tergite distinctly petiolate (figs 166, 175, 177); spiracle of first tergite usually medially or behind middle of tergite (figs 166, 177); anterior subalar depression with at least one carina 16
Rather large cosmopolitan subfamily Euphorinae of endoparasitoids of larval Lepidoptera, Coleoptera and Neuroptera (Raphidiidae) (Meteorini), and other tribes mainly of adult Coleoptera, Heteroptera, Hymenoptera, Neuroptera, Psocoptera and Orthoptera.
- First tergite sessile (fig. 161); spiracle of first tergite situated before middle of tergite (fig. 161); anterior subalar depression smooth *Blacus* Nees, 1819
Rather small cosmopolitan subfamily Blacinae of endoparasitoids of larval Coleoptera and Mecoptera.
- 16. Vein r-m of fore wing present (fig. 172); vein SR1 of fore wing straight (fig. 172); scapus comparatively short (fig. 174) *Meteorus* Haliday, 1835
- Vein r-m of fore wing absent (fig. 176); vein SR1 of fore wing curved (fig. 176); scapus comparatively long (fig. 178) *Dinocampus* Foerster, 1862

Review of the family Braconidae from Greenland

Subfamily Alysiinae Leach, 1815

Tribe Alysiini Leach, 1815

Genus *Alysia* Latreille, 1804

* *Alysia alticola* (Ashmead, 1890)
(figs 5-8)

Alysia manducator; Lundbeck, 1897: 246; Henriksen & Lundbeck, 1917: 548-549 (misidentification).

Material.— 1 ♀ (ZMUC), "S. Strömfjord, vii.1917, L.V. Nielsen"; 2 ♀ ♀ (ZMUC), "Igaliko, vii.1898, 6/10-1912, G. Mellor"; 1 ♂ (ZMUC), "Greenland SW, 64°08'N 50°29'W, Ameralik, Eqaluit ilordlit, 7-8.vii.2003, Kissavik Exp., ZMUC"; 3 ♂ ♂ (ZMUC, RMNH), "Greenland SW, 65°29'N 52°50'W, (or 13°W, bird cliff), Søndre Isortoq, bay, 14.vii.2003, Kissavik Exp., ZMUC"; 3 ♂ ♂ (ZMUC, RMNH), "Kapisigdlit, 18.vii.1950, 49, Chr. Vibe"; 1 ♂ (ZMUC), id., but 12.vii.1950, 37; 1 ♀ (RMNH), "Eqaluit (Julianahaab), 17.vii.1948, 266, Chr. Vibe"; 1 ♀ (ZMUC), "Iuagllut, ♀, Thaarup, Schlick"; 1 ♀ (ZMUC), "Kungnait, 20.vii.1954, T. Andersen (G.Z.U.)"; 1 ♀ (RMNH), "Godthaab, 24.vi.[19]25, 1/11.1925, Syngé"; 1 ♂ (ZMUC), Fredriksdal, 30.vii.1948, [C.] Vibe"; 1 ♂ (ZMUC), K'anissartut (Julianahaab), 19.vi.1948, Chr. Vibe"; 2 ♂ ♂ (ZMUC, RMNH), id., but 18.vi.1948, 31; 1 ♀ (ZMUC), "Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk".

Notes.— The comparatively dense and short setosity of the tenth and its surrounding antennal segments (about half as long as width of segment; fig. 5) show that the above specimens belong to *A. alticola* (Ashmead). *A. manducator* (Panzer, 1799), which is widely distributed in the Holarctic region but has not yet been found in Greenland, has a more slender third antennal segment and the setae of the tenth and neighbouring antennal segments are 0.7-0.8 times as wide as the segments and arranged mainly in two rows: a subbasal and a subapical one.

Genus *Aphaereta* Foerster, 1862

* *Aphaereta minuta* (Nees, 1811)
(figs 1-4)

Material.— 2 ♀♀ + 2 ♂♂ (ZMUC, RMNH), “Greenland SW, Bjørnesund east, Naujarssuit, 63°03’N 43°47’W, 28-30.vi.2003, Kissavik Exp. ZMUC”; 1 ♀ + 6 ♂♂ (ZMUC, RMNH), “Greenland SW, Ameralik, Eqaqut ilordlit, 64°08’N 50°29’W, 7-8.vii.2003, Kissavik Exp. ZMUC”; 4 ♀♀ (ZMUC), “Greenland SW, Ikamiut Kangerdluarssuat, Taserssuaq, 65°47’N 52°39’W, 17-18.vii.2003, Kissavik Exp. ZMUC”; 3 ♂♂ (ZMUC), “Greenland, Aasivik, Paamiut, u. sten, 17.vii.1997, J. Böcher”; 2 ♀♀ (ZMUC, RMNH), “Greenland SW, Evighedsfjord, Kangiussaq, 65°52’N 52°12’W, 19-20.vii.2003, Kissavik Exp. ZMUC”.

Notes.— The hind basitarsus is robust (fig. 2), the bases of the hind femur and the hind tarsus are more or less darkened and the precoxal sulcus is often more or less widely sculptured. This seems to fall within the variation present in this species. Reared as parasitoid of *Scatophaga* species in rotting organic matter (e.g. seaweed on the beach, human excrement).

Tribe Dacnusiini Foerster, 1862
Genus *Chorebus* Haliday, 1833

* *Chorebus* sp. near *cytherea* (Nixon, 1939)
(figs 18-19)

Material.— 1 ♀ (ZMUC), “[Greenland], Thule, 27.vii.1951, 33, Chr. Vibe”.

Notes.— Similar to *C. cytherea* (Nixon, 1939) but differs by the more robust marginal cell of the fore wing (fig. 18), the slender mandible (fig. 19), the setae of first tergite directed posteriorly, the precoxal sulcus narrow (and completely smooth), and the completely dark brown legs and palpi. The only known specimen has incomplete antenna and may be one of the only 15 (!) reported species of the genus from the Nearctic region (241 species are known from Europe) or perhaps belongs to an undescribed species. The genus has never been revised for the Nearctic area and even no compiled key is available.

Genus *Dacnusa* Haliday, 1833

* *Dacnusa groenlandica* spec. nov.
(figs 9-17)

Material.— Holotype, ♀ (ZMUC), “Greenland N., Kap København, 88°30’N, 22°30’W, 13.vii.1986, J. Böcher”. Paratypes (ZMUC, RMNH): 3 ♀♀ + 6 ♂♂, topotypic and same date.

Holotype, ♀, length of fore wing 2.3 mm, and of body 1.8 mm.

Head.— Head 2.3 times wider than long medially in dorsal view and somewhat widened behind eyes (fig. 12); antenna with 22 moderately setose segments, third segment 1.3 times as long as fourth segment, third, fourth and penultimate segments 3.5, 2.4 and 1.7 times as long as wide, respectively; maxillary and labial palp with 6 and 4

segments, respectively; length of maxillary palp 0.8 times height of head; face smooth, moderately convex medially and rather densely moderately long setose, with setae directed upwards; clypeus convex and smooth, with long setae; frons flat, smooth; vertex convex, smooth and sparsely setose; temple sparsely setose and in lateral view rather short (fig. 13); eye 0.6 times as long as temple in dorsal view; OOL:diameter of posterior ocellus:POL = 5:2:6; length of malar space 0.2 times basal width of mandible, malar space with shallow transverse depression; mandible 1.4 times longer medially than wide, with 3 teeth, middle tooth short triangular, lateral teeth wide and short, lobe shaped and rectangularly connected to mandible (fig. 17).

Mesosoma.— Length of mesosoma 1.4 times as long as high; pronotal side smooth and below smooth oblique groove setose; mesopleuron smooth, largely glabrous and no precoxal sulcus; pleural sulcus smooth; metapleuron largely smooth, evenly densely and whitish setose, with setae directed mainly posteriorly; mesoscutum smooth, middle lobe densely setose and with distinct medio-posterior groove; notauli absent on mesoscutal disc; scutellum distinctly convex, smooth and setose; propodeum densely whitish setose and smooth.

Wings.— Fore wing: pterostigma wide, slightly widened apically, part of pterostigma in front of vein r 1.6 times as long as vein r, pterostigma 1.7 times as long as vein 1-R1; SR1 strongly curved, resulting in a large marginal cell (fig. 9); r:2-SR:3-SR+SR1 = 5:7:50; 1-CU1:2-CU1 = 3:10; first subdiscal cell closed, robust (fig. 9). Hind wing: M+CU:1-M:r-m = 20:7:6; cu-a short.

Legs.— Hind coxa smooth, evenly setose laterally and ventrally; tarsal claws with indistinct lobe ventrally; fore tarsal segments slender; length of femur, tibia and basitarsus of hind leg 4.6, 10.0 and 4.3 times as long as wide, respectively; hind tibial spurs 0.2 and 0.3 times as long as hind basitarsus.

Metasoma.— First tergite moderately convex and densely setose, largely smooth, with distinct but short dorsal carinae basally and tergite as long as wide apically (fig. 15); dorsope absent; second and following tergites smooth and with only a subapical row of setae; length of setose (and widened) part of ovipositor sheath 0.08 times fore wing, sheath rather wide and with long setae.

Colour.— Rather dark brown (including palpi and antenna, but pedicellus yellowish); metasoma (except first tergite) brown; apex of hind trochantellus yellow; pterostigma and veins pale brown, but parastigma and veins below it brown; wing membrane subhyaline.

Variation.— Antenna of ♀ with 22 (1), 23 (1) or 24 (2) segments, of ♂ with 24 (2) or 26 (4) segments; length of fore wing 2.3–2.8 mm and of body 1.4–2.1 mm; vein m-cu of fore wing moderately (fig. 9) to rather far antefurcal; pterostigma of male similar to that of female (figs 9, 16).

Notes.— Similar to *D. arctica* Griffiths, 1984, from Lapland (N Sweden) and Alaska, however the new species differs as follows: the middle mesoscutal lobe is completely setose (only near the notauli and posteriorly in *D. arctica*), vein m-cu of the fore wing distinctly antefurcal (subinterstitial), the pterostigma of both sexes comparatively wide subapically (distinctly narrowed subapically), the mesosoma 1.3–1.4 times as long as high (1.1–1.2 times) and the antenna with 22–26 segments (20–24 segments).

Aphidiinae Haliday, 1833
Tribe Aphidiini Haliday, 1833
Genus *Aphidius* Nees, 1818

Key to Greenland species of the genus *Aphidius* Nees

1. Head gradually narrowed posteriorly in dorsal view (fig. 150); face 1.1-1.7 times as wide as high (figs 134, 149); fifth tergite of ♀ sparsely setose; subgenus *Aphidius* Nees, 1818 2
- Head directly narrowed posteriorly (fig. 154, sometimes less so in ♂); face about twice as wide as high (fig. 153); fifth tergite of ♀ rather extensively setose; subgenus *Euaphidius* Mackauer, 1961 *A. cingulatus* (Ruthe, 1859)
2. Fore tarsus comparatively robust (fig. 132); antenna of ♀ with about 15 segments (of ♂ 17-18); apical quarter of first tergite rather matt and largely finely sculptured sublaterally; first tergite baso-laterally very finely and densely aciculate, interspaces almost absent (fig. 141); first subdiscal cell of fore wing narrow (figs 133, 135); vein 1-R1 of fore wing (metacarp) about as long as pterostigma (fig. 133) *A. tarsalis* spec. nov.
- Fore tarsus slender (fig. 148); antenna of ♀ with 17-18 segments (of ♂ 20-21); apical quarter of first tergite strongly shiny and largely smooth; first tergite baso-laterally with 2-8 well separated sinuate carinae (fig. 145); first subdiscal cell of fore wing medium-sized (fig. 142); vein 1-R1 of fore wing distinctly shorter than pterostigma (fig. 142) *A. avenae* Haliday, 1834

Subgenus *Aphidius* Nees, 1818

Aphidius avenae Haliday, 1834
 (figs 142-151)

Aphidius picipes; Granger, 1952: 57.

Material.— 1 ♀ (ZMUC), "Vestgrønland, Uvkusigssat Fjord, Pangnertôq, 28-29.vii.1969, Jens Böcher"; 1 ♀ (ZMUC), "Greenland, Laksefjord, Upernavik, 15.viii.1972, J. Böcher"; 1 ♂ (ZMUC), "[Greenland], Tigssaluk, 27.vii.1954, T. Andersen (G.Z.U.)", "*Aphidius* (*A.*) *avenae* Hal., ♀, det. Mackauer"; 1 ♂ (ZMUC), "[Greenland], Tigssaluk, 8.viii.1954, T. Andersen (G.Z.U.)", "*= picipes* fra *Iris*, 29.x.[19]57", "*Aphidius* (*A.*) *ervi* Hal., ♀, det. Mackauer"; 5 ♂ ♂ (ZMUC), id., but 28.vii.1954; 3 ♂ ♂ (ZMUC), id., 5.viii.1954; 1 ♂ (ZMUC), id., but 31.vii.1954; 1 ♀ + 5 ♂ ♂ (ZMUC), "Greenland W, Sarqaq, Kapisigdlit, 29.vii.1973, J. Böcher"; 1 ♂ (ZMUC), id., but 8.viii.1950, Chr. Vibe; 1 ♀ (ZMUC), "Greenland, Kap Farvel-området, Kangarsuneq Qingordleq, Igdlorssuit, 17.viii.1970, J. Böcher"; 1 ♀ 1 ♂ (ZMUC), id., but Pamiagdhluk, Anordliuitsoq, 37, 7.viii.1970, J. Böcher"; 2 ♀ ♀ (ZMUC, RMNH), id., but 20.vii.1970; 1 ♂ (ZMUC), id., but Kangikitsok, Tupaussat (16), 24.vii.1970; 1 ♂ (ZMUC), "Greenland, Mellemfjord, Ketsjning, 23.vii.1967, J. Böcher"; 3 ♂ ♂ (ZMUC), "Greenland, Fredriksdal, Herjolfsnaes, 13.viii.1957, C. Vibe"; 1 ♂ (ZMUC), id., but Kangikitsok, 12.viii.1957; 1 ♂ (ZMUC), id., but Itivdliskasik, 11.viii.1957; 5 ♀ ♀ + 1 ♂ (ZMUC, RMNH), "Greenland, Laksefjord, Upernavik, 15.viii.1972, J. Böcher"; 5 ♀ ♀ + 3 ♂ ♂ (ZMUC, RMNH), "Vestgrønland, Umanak Fjord, Kangerdluarssuk, Kangerdlugssuakavsak, 22.viii.1968, Jens Böcher"; 1 ♀ + 7 ♂ ♂ (ZMUC, RMNH), "Vestgrønland, Urkusigssat Fjord, Pangnertôq, 28-29.vii.1969, Jens Böcher"; 1 ♂ (ZMUC), id., but 18-19.viii.1968; 1 ♂ (ZMUC), "Vestgrønland, Umanak Fjord, Alfred Wegener's Halvø, Magdlak, 24 & 26.viii.1968, Jens Böcher"; 1 ♂ (ZMUC), "[Greenland], Sdr Strømfj, no.

21, 21.vi.1952, C. Vibe"; 1 ♂ (ZMUC), id., but BW 8, 15, 20.vi.1952; 1 ♂ (ZMUC), "Greenland, Julianaháb, Narssak, 28.vii.1948, C. Vibe"; 3 ♂ ♂ (ZMUC, RMNH), "Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk"; 1 ♂ (ZMUC), id., but Signalhøjen, 19.vii.2004; 6 ♂ ♂ (ZMUC, RMNH), "Greenland SW, 63°21'N 50°59'W, Grædefjord, Nugssuaq, 4.vii.2003, Kissavik Exp., ZMUC"; 2 ♂ ♂ (ZMUC), id., but 63°22'N 50°56'W, islet Nugssuaq, 5.vii.2003; 1 ♂ (ZMUC), "Greenland SW, 61°56'N 49°19'W, Kvanefjord, Kang-erdluarssukasik, 26-27.vi.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland SW, 63°13'N 50°14'W, Fiskenaesfjorden, Qajartorissat, 2-3.vii.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland SW, 62°54'N 50°09'W, Bjørnesund, Eqaluit, 28-29.vi.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland SW, 63°55'N 50°55'W, Buksefjorden, east, 6.vii.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland, Sondrestrom Air Base, 19.vi.1952, W.J. Brown".

Notes.— Specimens with comparatively fine baso-lateral carinae on the first tergite are similar to the Holarctic *A. urticae* Haliday, 1834, but these specimens differ by the distinctly convex clypeus, the less flattened face and the shorter vein 1-R1 of the fore wing (but this last character state is rather variable). Completely black males occur with even the clypeus blackish; normally the clypeus is brownish-yellow. Petersen (1956) examined Lundbeck's material and concluded that it was *A. cingulatus* (Ruthe) and not *A. picipes* Nees, 1834 (for which the valid name is *A. avenae* Haliday, 1834). My examination leads to the same conclusion.

* *Aphidius tarsalis* spec. nov.
(figs 131-141)

Material.— Holotype, ♀ (ZMUC), "Greenland, Kap Farvel-området, Pamiagdhluk, Anordliuitsoq, 30II, 30.vii.1970, J. Böcher". Paratypes (1 ♀ + 4 ♂ ♂): 1 ♀ + 1 ♂ (ZMUC, RMNH), topotypic and with same date; 1 ♂ (ZMUC), id., but 29.viii.1970; 2 ♂ ♂ (ZMUC, RMNH), "Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk".

Holotype, ♀, length of fore wing 1.4 mm, and of body 1.9 mm.

Head.— Head 1.9 times wider than long medially in dorsal view and parallel-sided behind eyes; antenna with 15 segments, 0.6 times as long as body, third segment shiny, without rhinaria and as long as fourth segment, third, fourth and penultimate segments 2.3, 2.3 and 1.8 times as long as wide, respectively; maxillary and labial palp with 4 and 3 segments, respectively; length of maxillary palp 0.5 times height of head; distance between anterior tentorial pits 2.5 times distance between pit and eye; face smooth, only convex medio-ventrally and laterally rather densely moderately setose, with setae directed upwards; clypeus distinctly convex and smooth, with rather long setae (fig. 136); frons flat, smooth; vertex and temple convex, smooth and sparsely setose; eye 1.2 times as long as temple in dorsal view; OOL:diameter of posterior ocellus:POL = 6:2:5; stemmaticum somewhat wider posteriorly than laterally; length of malar space 0.7 times basal width of mandible, malar depression absent, area slightly depressed.

Mesosoma.— Length of mesosoma 1.4 times as long as high; pronotal side smooth and largely glabrous, with deep and smooth oblique groove; mesoscutum not protruding over pronotum in lateral view; mesopleuron smooth, largely glabrous, convex and no precoxal sulcus; pleural sulcus micro-crenulate; metapleuron smooth, with a few setae, a curved dorsal carina and a medium-sized deep pit; mesoscutum largely smooth and with few setae, and without medio-posterior groove; notauli absent on disc; scutel-

lum rather convex, smooth and setose; propodeum smooth (except areolation: median carina, costulae and very narrow areola) and with few long setae.

Wings.— Fore wing: pterostigma after narrow petiolar part narrow triangular (fig. 133); pterostigma 4 times as long as wide and 1.2 times as long as vein 1-R1; r+3-SR weakly curved and 1.7 times as long as width of pterostigma (fig. 133); veins m-cu and 2-M distinct; 1-CU1:2-CU1 = 1:12; first subdiscal cell narrow (figs 133, 135), closed ventrally, with long vein CU1b (fig. 133).

Legs.— Hind coxa smooth, evenly and rather long setose; tarsal claws minute, simple; fore tarsal segments comparatively robust (fig. 132); length of femur, tibia and basitarsus of hind leg 4.6, 11.7 and 5.0 times as long as wide, respectively; hind tibial spurs 0.2 times as long as hind basitarsus.

Metasoma.— First tergite latero-basally aciculate (fig. 141), aciculae hardly separated, dorsally parallel-sided, finely longitudinally striate and rather rugose subbasally and with weak median carina, rather weakly convex and with few long setae, tergite 2.4 times as long as wide apically; second and following tergites smooth and only with a subapical row of setae; length of setose part of ovipositor sheath 0.06 times fore wing, sheath triangular, narrowly truncate apically, dorsal side nearly straight, with some long setae (fig. 131).

Colour.— Rather dark brown [rather bleached]; clypeus, palpi, pedicellus, ventral half of pronotal side, humeral plate and legs (but middle and hind rather dark brown) yellowish-brown; tegulum and metasoma (except apical half of first tergite and ovipositor sheath) brown; pterostigma and veins pale brown, but parastigma and vein 1-M brown; wing membrane subhyaline.

Variation.— Antenna of ♀ with 15 (2) segments, of ♂ with 17 (1) or 18 (2) segments; length of fore wing 1.4-1.7 mm and of body 1.3-1.9 mm; body (including sometimes clypeus) mainly dark brown or black; antenna of male about as long as body; first tergite sometimes with subbasal depression; legs often partly or largely dark brown.

Notes.— Similar to *A. matricariae* Haliday, 1834, because of the rather robust fore tarsus, the narrow first subdiscal cell of fore wing and the comparatively narrow fore wing, but the new species has normal 4 segmented maxillar palpi. Runs in the key to Nearctic species (Smith, 1944) to *A. berberidus* Smith, 1944. However, this species has a widely truncate apex of the ovipositor sheath, the face paler than the vertex, vein 1-R1 of the fore wing distinctly shorter than the pterostigma, the first tergite smooth and its males have the antenna 16- or 17-segmented.

Subgenus *Euaphidius* Mackauer, 1961

Aphidius cingulatus (Ruthe, 1859)
(figs 152-159, 162)

Theracmion arcticus; Aurivillius, 1890: 28.

Aphidius picipes; Lundbeck, 1897: 241; Henriksen & Lundbeck, 1917: 543-544.

Aphidius cingulatus; Petersen, 1956: 45.

Material.— 1 ♀ (ZMUC), "Greenland, Egalvit Lok, 59. Stareng, 25.viii.1951, C. Vibe"; 1 ♀ (ZMUC), "Greenland, Torssukatak, No. 810, 28.vii.1949, C. Vibe"; 1 ♂ (ZMUC), "Østgrønland, Charcotsland,

7.viii.1958, Chr. Vibe", "*Aphidius* (A.) *avenae* Hal., Børge Petersen, det. 1962"; 1 ♀ + 1 ♂ (ZMUC), "Greenland SW, Kangia, eastern end, 65°19'N 51°60'W, 12.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ (ZMUC), "Vestgrønland, Uvkusigssat Fjord, Pangnertôq, 28-29.vii.1969, Jens Böcher"; 2 ♂ ♂ (ZMUC), [Greenland], Godhavn, Disko Pinterat, 310.vii.1958 (10), Jens Böcher"; 1 ♂ (ZMUC), "Greenland, Torssukat, no. 788, 27.vii.1949, C. Vibe"; 2 ♂ ♂ (ZMUC); "Greenland, Grønødal, 400-500 m, 23.viii.1950, C. Vibe"; 1 ♀ (ZMUC), "Greenland SW, Kangia, eastern end, 65°19'N 51°60'W, 12.vii.2003, Kissavik Exp., ZMUC"; 2 ♂ ♂ (ZMUC, RMNH), "Greenland SW, 65°28'N 52°12'W, Søndre Isortoq, Nuk (1 ♂) or bay (1 ♂), 14.vii.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland SW, 66°00'N 52°33'W, Evighedsfjord, Taterat, 19.vii.2003, Kissavik Exp., ZMUC"; 5 ♂ ♂ (ZMUC), "Greenland SW, Ikamiut Kangerdluarssuat, Taserssuaq, 65°47'N 52°39'W, 17-18.vii.2003, Kissavik Exp. ZMUC"; 2 ♂ ♂ (ZMUC), "Greenland SW, 63°05'N 50°41'W, Fiskenæsset, east, 1.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ (ZMUC), "Greenland SW, Kangerdluarssuk, 66°59'N 53°12'W, 24-25.vii.2003, Kissavik Exp. ZMUC"; 1 ♀ + 1 ♂ (ZMUC), "Greenland SW, Itivleq, eastern end, 66°33'N 52°26'W, 22.vii.2003, Kissavik Exp. ZMUC"; 1 ♂ (ZMUC), "Østgrønland, Faxe sø, Ganselandet, 1958, Chr. Vibe"; 4 ♂ ♂ (ZMUC), "Vestgrønland, Godhavn, Fortunebay, 1.vii.1968, Jens Böcher"; 1 ♂ (ZMUC), "Vestgrønland, Disko Fjord, Eqlúnguit, 3.vii.1967, Jens Böcher"; 1 ♀ + 3 ♂ ♂ (ZMUC), "Greenland, Umanak, Sâtut, 10.vii.1970, P. Volsø"; 1 ♀ + 4 ♂ ♂ (ZMUC, RMNH), "Greenland, Umanak, 9-28.vii.1970, P. Volsø"; 1 ♂ (ZMUC), id., but 3.viii.1951, C. Vibe; 2 ♀ ♀ + 7 ♂ ♂ (ZMUC), "Greenland, Mestersvig, 3.vi.1953, C. Vibe"; 2 ♀ ♀ + 2 ♂ ♂ (ZMUC, RMNH), id., but 7.vii.1953; 1 ♀ + 1 ♂ (ZMUC), id., but 22.v.1953; 2 ♂ ♂ (ZMUC), "Greenland, Thule, Lok 45 på *Carex* 400 moh, 5.vii.1951, C. Vibe"; 1 ♂ id., but 28.vii.1951; 2 ♂ ♂ (ZMUC), id., but 1.vi.1953; 1 ♂ (ZMUC), id., but 26.vi.1953; 1 ♀ (RMNH), id., but 8.vi.1952, 54; 1 ♂ (ZMUC), Greenland, Sukkertoppen, 6.vi.1949, Chr. Vibe, No. 201"; 1 ♂ (ZMUC), "Greenland, Frederiksdal, 30.vi.1948, C. Vibe"; 2 ♂ ♂ (ZMUC), id., but Herjofsaes, 13.viii.1957; 2 ♂ ♂ (ZMUC), "Greenland, Mellemfjord, 24.vii.1967, C. Vibe"; 1 ♂ (ZMUC), "Vestgrønland, Mellemfjord, Disko, Sydkyst overfor, Iterdlagssuaq, 24.vii.1967, Jens Böcher"; 1 ♂ (ZMUC), "Greenland, Kap Farvel-området, Pamiagdlok, Anordliuitsoq, 61, 29. viii.1970, J. Böcher"; 1 ♀ + 1 ♂ (ZMUC), id., but 20.vii.1970; 1 ♂ (ZMUC), id., but Kangikitsoq, Tupaussat (16), 24.vii.1970; 1 ♂ (ZMUC), "Greenland, 297, 23.vi.1949, C. Vibe"; 1 ♂ (ZMUC), "Sarqaq, 12.vii.1949, 490, C. Vibe"; 1 ♂ (ZMUC), "Greenland, Kangerslusuaq, 30.vii.1999, L. Vilhemsén"; 4 ♂ ♂ (ZMUC, RMNH), "Greenland WG, Disko Bugt, Qeqertasussuk, 68°35'N 51°05'W, 6-12.viii.1987, J. Böcher"; 1 ♂ (ZMUC), "Vestgrønland, Disko Bugt, Qapiarfit, 19.vi.1989, Jens Böcher"; 2 ♂ ♂ (ZMUC), "Greenland, Mellemfjord, Ketsjning, 23.vii.1967, J. Böcher"; 1 ♂ (ZMUC), id., but 24.vii.1967, C. Vibe; 2 ♀ ♀ + 2 ♂ ♂ (ZMUC, RMNH), "Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk"; 2 ♂ ♂ (ZMUC), "[Greenland], Kungnait, 20.vii.1954, T. Andersen (G.Z.U.)"; 2 ♂ ♂ (ZMUC), "[Greenland], Tasuisak, 24.vii.1889, Lundbeck", "*Aphidius cingulatus* Ruthe, B. P[etersen], 1956", "*Euaphidius cingulatus* (Ruthe), det. Mackauer [19]61"; 2 ♀ ♀ (ZMUC, RMNH), "Greenland, Sondrestrom Air Base, 28.vii.1952, W.J. Brown"; 1 ♂ (ZMUC), "[Greenland], Sdr Strøm, (BW8), 29.vii.1952, 74, Chr. Vibe"; 1 ♂ (ZMUC), "[Greenland], Evighedsfjorden, 11.vi.1952, 10, Chr. Vibe".

Notes.— The mesosoma (except for the pronotum ventrally and the mesopleuron antero-dorsally) is dark brown as in other boreal specimens and the temple slightly longer (length of eye about 1.4 times temple in dorsal view; 1.6-1.8 times in European specimens). Males (as in the subgenus *Aphidius* Nees) have the third and fourth antennal segments much more robust than the females and the baso-lateral striae of first tergite are less developed. *A. cingulatus* has the clypeus rather wide and comparatively weakly convex (figs 152; but sometimes in males moderately convex), the ventral half of pronotal side yellowish-brown or pale brown (exceptionally dark brown), the pterostigma dark brown and the palpal segments robust. The temples are less directly narrowed in males than in females.

Genus *Trioxys* Haliday, 1833
Subgenus *Betuloxys* Mackauer, 1960

* *Trioxys compressicornis* Ruthe, 1859
 (figs 127-130)

Material.— 1 ♀ (ZMUC), “Grønland, Narssarsuaq, 61.10 N, 45.25 W, 20.vi.1983, Peter Nielsen”; 1 ♀ (ZMUC), id., but 1.viii.1983; 1 ♀ (RMNH), “Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk”.

Notes.— A conspicuous species in the fauna of Greenland; it is the only Aphidiine species with a largely yellow head and the female has very conspicuous prongs (fig. 130).

Biology.— Parasitoid of Callaphidid aphids on birch (*Betula* spp.).

Tribe Praini Mackauer, 1961
Genus *Praon* Haliday, 1833

* *Praon brevistigma* spec. nov.
 (figs 119-126)

Praon abjectus; Henriksen & Lundbeck, 1917: 544-544.

Praon abjectum; Granger, 1952: 57.

Material.— Holotype, ♀ (ZMUC), “Greenland, Kap Farvel-området, Pamiagdhluk, Anordliuitsaq, 41, 1.viii.1970, J. Böcher”. Paratypes (31 ♀♀ + 47 ♂♂): 1 ♀ + 1 ♂ (RMNH), topotypic with holotype and same date; 1 ♂ (ZMUC), id., but (11 III), 19.vii.1970; 1 ♂ (ZMUC), id., but (40), 9.viii.1970; 2 ♀♀ (ZMUC), id., but (37), 7.viii.1970; 1 ♂ (ZMUC), id., but (30 III), 30.vii.1970; 1 ♂ (RMNH), id., but (34), 3.viii.1970; 1 ♀ + 5 ♂♂ (ZMUC, RMNH), id., but (13c), 20.vii.1970; 3 ♀♀ + 1 ♂ (ZMUC, RMNH), id., but (13b); 1 ♂ (ZMUC), id., but (36), 5.viii.1970; 2 ♀♀ (ZMUC, RMNH), id., but (64; 1 ♀ 61), 29.viii.1970; 1 ♂ (ZMUC), id., but (5), 15-30.vii.1970; 2 ♂♂ (ZMUC), id., but (13a), 15-30.vii.1970; 1 ♂ (ZMUC), id., but (51), Kangersuneq Qingordleq, Igdlorssuit, 15.viii.1970; 1 ♀ + 2 ♂♂ (ZMUC), “Grønland, Narssarsuaq, 61.10 N, 45.25 W, 1.viii.1983, Peter Nielsen”, “*Praon abjectum* Hal., Børge Petersen, det. 1968”; 1 ♀ (ZMUC), id., but 31.viii.1983; 1 ♂ (ZMUC), id., but 26.vii.1983; 1 ♀ (ZMUC), “Greenland, Sondrestrom Air Base, 28.vii.1952, W.J. Brown”, “*Praon abjectum* Hal., Børge Petersen, det. 1959”; 1 ♂ (ZMUC), id., but 12.viii.1952; 1 ♀ (ZMUC), “[Greenland], Irpiksuit, 19.vii.1890, Lundbeck”, “*Praon abjectum* (Hal.), det. Mackauer”; 2 ♂♂ (ZMUC), “[Greenland], G., St. 5 [= North East Greenland, Zackenberg, 74°18'N, 20°38'W, yellow pan trap, H. Meltotte]”, “*Praon peregrinus*, P.N. Buhl, det. 1996”; 1 ♀ + 2 ♂♂ (ZMUC, RMNH), “Greenland, Upernaviarsuk, 60°45'N, 45°54'W, 23.vii.1983, P. Nielsen”; 2 ♀♀ (ZMUC), “Greenland, Fredriksdal, Herjolfsnaes, 13.viii.1957, C. Vibe”; 1 ♂ (ZMUC), id., but Itindlikasik, 11.viii.1983; 1 ♀ (ZMUC), “Greenland, 393, 6.vii.1949, C. Vibe”; 1 ♂ (ZMUC), id., but 419, 8.vii.1949; 1 ♀ + 1 ♂ (ZMUC, RMNH), id., but 38, 13.vii.1950; 1 ♂ (RMNH), id., but 49, 18.vii.1950; 1 ♂ (ZMUC), id., but 393, 6.vii.1949; 1 ♀ (ZMUC), “W. Greenland, Enighedsfjorden, 1952, Chr. Vibe”; 1 ♂ (ZMUC), “Greenland, Qarajafunata, 17.vii.1969, J. Böcher”; 1 ♀ + 2 ♂♂ (ZMUC, RMNH), “Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk”; 1 ♂ (ZMUC), “Vestgrønland, Godhavn, Fortunebay, 1.vii.1968, Jens Böcher”; 4 ♂♂ (ZMUC, RMNH), id., but 69°15'N 53°34'W, 20.vii.1992; 1 ♂ (ZMUC), “Vestgrønland, Umanak Fjord, Agpat, Umi-asngssup ilua, 23.vii.1969, Jens Böcher”; 1 ♀ (ZMUC), “Greenland WG, Søndre Strømfjord, 67°02'N, 45°24'W, 18-21.vii.1984, J. Böcher”; 2 ♀♀ (ZMUC; without head), id., but 2.viii.1992; 1 ♂ (ZMUC), “Greenland WG, Disko Bugt, Qeqertassussuk, 68°35'N 51°05'W, 6-12.viii.1987, J. Böcher”; 1 ♂ (ZMUC), “Greenland, Torssukátak, 28.vii.1949, 813, C. Vibe”; 1 ♀ (RMNH), “Greenland SW, Kangerdluarssuk, east, 66°59'N 53°12'W, 24-25.vii.2003, Kissavik Exp. ZMUC”; 1 ♀ (ZMUC), “Greenland, Kutdligssat, no.

233, 12.vi.1949, C. Vibe; 1 ♂ (ZMUC), "Greenland SW, 65°52'N 52°12'W, Evighedsfjorden, Kangiussuq, Lok 14, 12.vi.1952, C. Vibe"; 1 ♀ (RMNH), "Greenland, Coloradodal, Cassiopehede, Fanggl. 3, gras, 2.viii.1994, J. Böcher"; 1 ♂ (ZMUC), "Greenland, Magdlak, 25.vii.1969, J. Böcher"; 1 ♀ + 1 ♂ (ZMUC), id., but 24 & 26.vii.1968; 1 ♂ (RMNH), id., but A. Wegener's Halvø, Vandfaelde, 26.vii.1969, C. Vibe; 1 ♂ (ZMUC), "Greenland, Sagdliauseq, Qioge, 26.viii.1968, J. Böcher"; 1 ♂ (RMNH), Greenland, Pangner-tag, Vukusigssat Fjord, Vandfaelde, 29.vii.1969, C. Vibe"; 1 ♂ (ZMUC), "Greenland, Jamesonland, Muslingeelvbugt, Fgl. 3, 26.vii.1994, J. Böcher"; 1 ♀ (ZMUC), "[Greenland], Ipiutat, 6.ix.1889, Lundbeck"; "; 1 ♂ (ZMUC), "[Greenland], Sdr Strømfj, (BW8), 16.vii.1952, Chr. Vibe"; 2 ♀ ♀ (ZMUC, RMNH), "Vestgrønland, Umanak Fjord, Quarásop nunatâ, 18-19.vii.1969, Jens Böcher"; 1 ♀ (ZMUC), "Vestgrønland, Svartenhuk øst, Kangiussap qingua, 15.viii.1968, Jens Böcher"; 1 ♀ (ZMUC; no fore wings), "Vestgrønland, Umanak Fjord, Perdlerfiup kangerdlua, Tasiussaq, 25.viii.1968, Jens Böcher"; 1 ♂ (RMNH), "Vestgrønland, Nûgâtsiaq, 26.vii.1969, Jens Böcher".

Holotype, ♀, length of fore wing 2.1 mm, and of body 2.1 mm.

Head.— Head 1.8 times wider than long medially in dorsal view and parallel-sided behind eyes; antenna with 14 segments, 0.7 times as long as body, third segment shiny, without rhinaria and 1.4 times as long as fourth segment, third, fourth and penultimate segments 3.5, 2.5 and 2.5 times as long as wide, respectively (figs 121, 123); maxillary and labial palp with 4 and 3 segments, respectively; length of maxillary palp 0.8 times height of head; distance between anterior tentorial pits 4 times distance between pit and eye; face smooth, moderately convex medially and rather densely moderately setose, with setae directed downwards; clypeus convex and smooth, with rather long setae; frons flat, smooth; vertex and temple convex, smooth and sparsely setose; eye 0.7 times as long as temple in dorsal view; OOL:diameter of posterior ocellus:POL = 4:2:3; length of malar space equal to basal width of mandible, malar depression absent.

Mesosoma.— Length of mesosoma 1.4 times as long as high; pronotal side smooth and below smooth oblique groove setose; mesoscutum protruding over pronotum in lateral view; mesopleuron smooth, largely glabrous, convex and no precoxal sulcus; pleural sulcus micro-crenulate; metapleuron largely smooth, evenly densely and greyish setose; mesoscutum largely smooth and rather densely setose, and without medio-posterior groove; notauli complete, narrow and smooth; scutellum rather convex, smooth and setose; propodeum with rather short greyish setae and smooth.

Wings.— Fore wing: pterostigma after narrow petiolar part comparatively wide triangular for the genus (fig. 119); pterostigma 3 times as long as wide and 1.6 times as long as vein 1-R1; r+3-SR+SR1 weakly curved and twice as long as width of pterostigma (fig. 119); veins m-cu and 1-SR+M weakly developed, narrower than other veins; 1-CU1:2-CU1 = 1:12; first subdiscal cell robust, open ventrally, with only pigmented trace of a long vein CU1b (fig. 119). Hind wing: veins of basal cell completely sclerotised.

Legs.— Hind coxa smooth, evenly and rather long setose; tarsal claws minute, simple; fore tarsal segments slender, but telotarsus enlarged (fig. 122); length of femur, tibia and basitarsus of hind leg 4.8, 11.7 and 7.2 times as long as wide, respectively; hind tibial spurs 0.2 times as long as hind basitarsus.

Metasoma.— First tergite strongly evenly convex and largely setose and smooth (but medially glabrous and laterally superficially sculptured), tergite as long as wide apically; second and following tergites smooth and with only a subapical row of setae; length of setose part of ovipositor sheath 0.06 times fore wing, sheath triangular, dorsal side nearly straight, mainly dorsally and apically setose (fig. 120).

Colour.— Rather dark brown (including palpi and antenna, but pedicellus slightly paler); metasoma (except first tergite), most of fore leg, middle and hind tarsi (except dark telotarsi) pale brown; pterostigma and veins pale brown, but parastigma and veins below it brown; wing membrane subhyaline.

Variation.— Antenna of ♀ with 14 or 15 segments, of ♂ with 16 or 17 segments, rarely less (14) or more (18); length of fore wing 1.4–2.1 mm and of body 1.2–2.1 mm; pterostigma of male similar to that of female.

Notes.— Similar to the Palaearctic *P. abjectum* (Haliday, 1834) but the new species differs by the wider pterostigma, the slightly lower number of antennal segments (♀: 14–15, rarely 13) and the short vein 1-R1 of fore wing (about 1.5 times width of pterostigma). *P. abjectum* is reported also from the Nearctic region (Yu et al., 2005) but not recorded in the revision by Johnson (1987); this may indicate that the occurrence in the Nearctic region is based on misidentifications. Runs in the key to the Nearctic *Praon* spp. by Johnson (1987) to *P. unicum* Smith, 1944, but this species differs by the shape of the pterostigma (length of pterostigma 4.5 times its width (about 3 times in Greenland specimens)), length of vein 1-R1 of fore wing (2.5 times longer than width of pterostigma (about 1.5 times)), ovipositor sheath slightly concave dorsally and rather wide apically (straight dorsally and comparatively narrow apically), first and second metasomal tergites yellowish-brown (dark brown) and vein m-cu of fore wing completely sclerotised (more or less reduced). The shape of the pterostigma and the colour of the body is reminiscent of the Nearctic *P. artemisaphis* Smith, 1944, but this species has vein 1-R1 about as long as width of the pterostigma, the antenna of ♀ with 17 segments, the ovipositor sheath less narrowed apically, the lateral mesoscutal lobes nearly glabrous and the legs darker.

Praon peregrinum Ruthe, 1859, was described from Iceland and is one of the northern species with a dark third antennal segment. It does not fit the new species; the length of the antenna is about as long as the body, and consists of 16–18 segments (♀) or 18–20 segments (♂). Moreover, it is considered to be a synonym of *P. abjectum* (Haliday) (Yu et al., 2005).

Subfamily Blacinae Foerster, 1862

Tribe Blacini Foerster, 1862

Genus *Blacus* Nees, 1819

* *Blacus (Blacus) groenlandicus* spec. nov.
(figs 160, 161, 163–165)

Material.— Holotype, ♀ (ZMUC), “[Greenland], Iviglut, 14.viii.1949, [C.] Vibe”, “*Blacus* ?, Børge Petersen det.19.”.

Holotype, ♀, length of body 2.1 mm, of fore wing 2.0 mm.

Head.— Antenna with 17 segments, slightly widened apically and subapical segments robust, moniliform (fig. 163), third segment 1.2 times as long as fourth segment, length of third, fourth and penultimate segments 2.8, 2.3 and 1.4 times as long as wide, respectively; length of maxillary palp 0.7 times height of head; frons smooth and largely setose; OOL:diameter of ocellus: POL = 9:4:8; length of eye in dorsal view 1.8 times temple; temples parallel-sided behind eyes; face smooth; clypeus strongly convex,

anterior tentorial pits below lower level of eyes; malar suture absent; length of malar space twice basal width of mandible (fig. 160).

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely reticulate-rugose, but largely smooth dorsally; precoxal sulcus narrowly rugulose; metapleuron rather coarsely reticulate; notauli complete, narrow and smooth, posteriorly with a few longitudinal rugae; mesoscutal lobes rather flat and largely smooth; scutellar sulcus smooth except for a median carina; scutellum smooth and with indistinct lateral carina; propodeal tubercles obsolescent; dorsal face of propodeum anteriorly shiny coriaceous and posteriorly reticulate, posterior face largely smooth, but dorsally reticulate (fig. 161).

Wings.— Fore wing: first discal cell narrowly truncate anteriorly, and parastigma medium-sized (fig. 165); $r:3-SR+SR1:2-SR = 5:39:12$; r somewhat shorter than width of pterostigma; $3-SR+SR1$ slightly curved and ending far from apex of wing (fig. 165); $1-CU1:2-CU1 = 4:5$; $1-CU1$ oblique; $cu-a$ postfurcal by 4 times its length (fig. 165); $2-R1$ and $2-M$ absent. Hind wing: $M+CU:1-M = 17:9$.

Legs.— Hind coxa rugose dorso-basally; length of femur, tibia and basitarsus of hind leg 6.0, 10.6 and 7.7 times their width, respectively.

Metasoma.— Length of first tergite 1.4 times its apical width, its surface laterally smooth and medially distinctly convex, with dorsal carinae close to apex of tergite and with a few rugae (fig. 161); second and following tergites smooth; length of ovipositor sheath 0.22 times fore wing, 0.7 times hind tibia, as long as hind femur and 1.6 times first tergite (fig. 164).

Colour.— Blackish; palpi and legs brownish-yellow, but telotarsi and hind coxa dark brown; antenna, tegulae and metasoma (except first tergite) dark brown; parastigma, pterostigma, and veins brown, wing membrane subhyaline.

Notes.— Does not fit in the key to the Nearctic species of the genus *Blacus* (subgenus *Blacus*) by van Achterberg (1988). In the key to the Palaearctic species it runs either to *B. modestus* Haeselbarth, 1973, known from Denmark to Bulgaria, or to *B. nivalis* van Achterberg, 1988, from the Canary Islands. It differs as follows:

1. Length of malar space about equal to basal width of mandible; first discal cell of fore wing of ♀ comparatively widely truncate anteriorly, and parastigma rather long (fig. 315 in van Achterberg, 1988); vein $2-M$ of fore wing present; length of ovipositor sheath about 0.35 times as long as fore wing; antenna of ♀ hardly moniliform subapically; first metasomal tergite parallel-sided apically and about 1.6 times as long as wide apically; metapleuron and dorsal face of propodeum posteriorly granulate, Europe *B. modestus* Haeselbarth, 1973
- Length of malar space about twice basal width of mandible (fig. 160); first discal cell of fore wing of ♀ narrowly truncate or acute anteriorly, and parastigma medium-sized to short; vein $2-M$ of fore wing absent; length of ovipositor sheath 0.19–0.22 times as long as fore wing; antenna of ♀ distinctly moniliform subapically (fig. 163); first tergite distinctly widened apically and about 1.4 times as long as wide apically (fig. 161); metapleuron and dorsal face of propodeum posteriorly distinctly rugose-reticulate or largely smooth 2
2. Vein $cu-a$ of fore wing postfurcal by four times its length (fig. 165); vein $3-SR+SR1$ of fore wing ending far from apex of wing (fig. 165); first discal cell of fore wing of ♀ narrowly truncate anteriorly, and parastigma medium-sized (fig. 165); notauli

complete posteriorly and with some rugae; precoxal sulcus narrowly rugulose; third antennal segment of ♀ about 2.8 times as long as wide; hind femur and tibia brownish-yellow; metapleuron and dorsal face of propodeum posteriorly distinctly rugose-reticulate; Greenland *B. groenlandicus* spec. nov.

- Vein cu-a of fore wing postfurcal by about its length; vein 3-SR+SR1 of fore wing ending near apex of wing; first discal cell of fore wing of ♀ acute anteriorly, and parastigma short (fig. 303 in van Achterberg, 1988); notauli absent posteriorly and without rugae; precoxal sulcus smooth; third antennal segment of ♀ about 3.5 times as long as wide; hind femur and tibia largely infuscate; metapleuron and dorsal face of propodeum largely smooth; Canary Islands *B. nivalis* van Achterberg, 1988

Subfamily Doryctinae Foerster, 1862

Tribe Spathiini Foerster, 1862

Genus *Spathius* Nees, 1819

* *Spathius exarator* (Linnaeus, 1758)
(figs 25-28)

Material.— 1 ♀ (ZMUC), “Godthaab, 7.vii.1944, C. Vibe”.

Notes.— The only specimen examined is an artificially flattened specimen which was possibly imported with timber. In view of the paucity of records, this conspicuous species, which parasitizes small wood-boring Coleoptera, is unlikely to be permanently resident in Greenland, but might be regularly imported.

Subfamily Euphorinae Foerster, 1862

Tribe Meteorini Cresson, 1887

Genus *Meteorus* Haliday, 1835

Key to Greenland species of the genus *Meteorus* Haliday

1. Setae of face of ♀ nearly as long as setae of clypeus (fig. 179); first metasomal tergite slightly more robust and usually more abruptly narrowed submedially (but in front of spiracles largely parallel-sided; figs 166, 167, 169) *Meteorus arcticus* Papp, 1989
- Setae of face of ♀ much shorter than setae of clypeus (fig. 171); first tergite comparatively slender and gradually narrowed submedially (fig. 175) *Meteorus rubens* (Nees, 1811)

Meteorus arcticus Papp, 1989
(figs 166-170, 179)

Meteorus arcticus Papp, 1989: 98-99, figs 1-10.

Material.— 1 ♀ (ZMUC), “Vestgrønland, Godhavn, 8.viii.1968, Jens Böcher”, 2 ♀♀ (ZMUC, RMNH), id., but 20.vii.1968, 1 ♂ (ZMUC), id., but 7.viii.1968; 1 ♂ (ZMUC), id., but Østerlein, 31.vii.1968; 1 ♀ (ZMUC), “[Greenland], Kapisigdlet, 14.vii.1950, 46, Chr. Vibe”; 1 ♂ (ZMUC), “[Greenland], N. Stromfj.,

Niurssorfiaaq, 25.vii.1958 (6), Jens Böcher"; 1 ♀ (RMNH), "[Greenland], Gvh [?], St. 5 [= North East Greenland, Zackenberg, 74°18'N, 20°38'W, yellow pan trap, H. Meltote], 26.viii.[19]96", "*Meteorus arcticus*, P.N. Buhl, det. 1996".

Notes.— Described from Scoresbysund (E Greenland, 70°30'N, 21°57'30"W) and collected in yellow pan traps placed in vegetation with *Vaccinium uliginosum* Linnaeus, *Empetrum nigrum* Linnaeus, *Polygonum viviparum* Linnaeus, *Betula nana* Linnaeus, *Dryas octopetala* Linnaeus, *Rhododendron lapponicum* (Linnaeus) and *Salix glauca* Linnaeus. This is an uncommon species of the genus *Meteorus* very closely related to *M. rubens* (Nees). It may have the dorsope of the first tergite weakly impressed (but absent in examined specimens; the dorsope may be indistinctly developed also in *M. rubens*), the tergite slightly more abruptly narrowed submedially (but in front of the spiracles largely parallel-sided; figs 166, 167, 169), the second submarginal cell of fore wing is widened posteriorly (fig. 170, but this is both in *M. rubens* and in this species variable); and the tarsal claws more slender subbasally. The few character-states which seem to separate both species are given in the key.

Meteorus rubens (Nees, 1811)
(figs 171-175)

Meteorus islandicus; Lundbeck, 1897: 243; Henriksen & Lundbeck, 1917: 545; Granger, 1952: 57.

Material.— 6 ♀♀ (ZMUC, RMNH), "Vestgrønland, Godhavn, 12.viii.1968, J. Böcher"; 2 ♂♂ (ZMUC), id., but 7.viii.1968; 1 ♀ (ZMUC), id., but 8.viii.1968; 1 ♀ (ZMUC), "Eqaluit (Julianahaab), 17.vii.1948, 266, Chr. Vibe"; 10 ♀♀ + 24 ♂♂ (ZMUC, RMNH), "Greenland SW, 65°52'N 52°12'W, Evighedsfjord, Kangiussaq, 19-20.vii.2003, Kissavik Exp., ZMUC"; 2 ♀♀ + 7 ♂♂ (ZMUC, RMNH), "Greenland SW, 66°00'N 52°33'W, Evighedsfjord, Taterat, 19.vii.2003, Kissavik Exp., ZMUC"; 3 ♀♀ + 4 ♂♂ (ZMUC, RMNH), "Greenland SW, 63°55'N 50°55'W, Buksefjorden, east, 6.vii.2003, Kissavik Exp., ZMUC"; 2 ♀♀ + 2 ♂♂ (ZMUC, RMNH), "Greenland SW, 63°035'N 49°47'W, Bjørnesund, east, Naujarssuit, 28-30.vi.2003, Kissavik Exp., ZMUC"; 2 ♂♂ (ZMUC), "Greenland SW, 63°22'N 50°56'W, Grædefjord, islet Nugssuaq, 5.vii.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), id., but 4.vii.2003; 4 ♂♂ (ZMUC), "Greenland SW, 63°05'N 50°41'W, Fiskenæsset, east, 1.vii.2003, Kissavik Exp., ZMUC"; 2 ♂♂ (ZMUC), "Greenland SW, 63°13'N 50°04'W, Fiskenæsfjorden, east, Ukaliussartoq, 3.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ + 3 ♂♂ (ZMUC), "Greenland SW, Itivleq, eastern end, 66°33'N 52°26'W, 22-23.vii.2003, Kissavik Exp. ZMUC"; 2 ♀♀ (ZMUC), "Greenland SW, 64°02'N 52°17'W, Praestefjord, 7.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ + 3 ♂♂ (ZMUC), "Greenland SW, 64°08'N 50°29'W, Ameralik, Eqaluit ilordlit, 7-8.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ (ZMUC), "Greenland SW, 61°56'N 49°19'W, Kvanefjord, Kangerdluarssukasik, 26-27.vi.2003, Kissavik Exp., ZMUC"; 1 ♂ (ZMUC), "Greenland SW, Kangerdluarssuk, 66°59'N 53°12'W, 24-25.vii.2003, Kissavik Exp. ZMUC"; 3 ♂♂ (ZMUC), "Greenland SW, Ikamiut Kangerdluarssuat, Taserssuaq, 65°47'N 52°39'W, 17-18.vii.2003, Kissavik Exp. ZMUC"; 3 ♀♀ + 1 ♂ (ZMUC, RMNH), "Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk"; 3 ♀♀ (ZMUC, RMNH), "Greenland S, Narsarsuaq, Signalhøjen, 19.vii.2004, T. Munk"; 10 ♀♀ (on one card, together with greyish cocoons; ZMUC), [S Greenland], Nanortalik, ex l[arva] of *Caradrina quadrangular*, 5.vi.1981, kl. 15.vii.1981"; 1 ♀ + 1 ♂ (ZMUC), "Greenland, Lollandselv, flg. 17, 8.viii.1994, J. Böcher"; 1 ♀ (ZMUC), "Greenland, Quigua, Nuuk, 21.vii.1997, J. Böcher"; 7 ♀♀ + 11 ♂♂ (ZMUC, RMNH), "Greenland SE, Skoldungen, Bygden, 19-27.vii.1992, S. Andersen"; 1 ♀ (ZMUC), "Greenland, Sletten, vi.1920, J. Brændegaard"; 1 ♂ (ZMUC), "[Greenland], Tasiussak, 24.vii.[18]89"; 1 ♂ (ZMUC), "Kungnait, 20.vii.1954, T. Andersen (G.Z.U.)"; 1 ♀ (RMNH), id., but 13.vii.1954; 1 ♂ (ZMUC), "Østgrønland, Rypefjord, 19.viii.1958, Chr. Vibe"; 1 ♂ (ZMUC), id., but Charcotsland, 7.viii.1958; 3 ♀♀ + 4 ♂♂ (ZMUC), "[Green-

land], Mestersvig, 5.vii.1953, Chr. Vibe"; 1 ♀ with "*Meteorus islandicus* Ruthe, Børge Petersen, det. 1959"; 8 ♀♀ + 4 ♂♂ (ZMUC, RMNH), id., but from Klaekket and pale brownish cocoons; 1 ♂ (ZMUC), "[Greenland], Narsarsuaq (B.W.I.), 3.vii.1949, Chr. Vibe, 363 (124)"; 1 ♂ (ZMUC), "[Greenland], Ikera-sausak, 3.viii.1933, M. Jörgensen"; 1 ♂ (ZMUC), id., but 14.viii.1933; 1 ♂ (ZMUC), "[Greenland], Amoralik, 22.vii.[18]45. Ldbk"; 6 ♀♀ + 4 ♂♂ (ZMUC), "Grønland, Narssarsuaq, 61°10'N, 45°25'W, 20.vi.1983 (1 ♂), 5.vii.1983 (1 ♂), 13.viii.1983 (3 ♀♀), 1.viii.1983 (1 ♀ + 1 ♂), 27.vii.1983 (2 ♀♀), 11.viii.1983 (1 ♀), & 16.vii.1983 (1 ♀ + 1 ♂), Peter Nielsen"; 1 ♂ (ZMUC), id., but 4-6.viii.1983 and "*Meteorus leviventris* Wesm., Børge Petersen, det. 1986"; 1 ♀ (ZMUC), id., but Hspitalsdalen, 10 m.o.h., 16-24.vii.1984; 1 ♂ (ZMUC), "[Greenland], Kapisigdlit, 18.vii.1950, 49, Chr. Vibe"; 1 ♀ (ZMUC), id., but 13.vii.1950; 1 ♀ (ZMUC), id., but 3.viii.1950, 500-800 m; 1 ♀ (ZMUC), id., but lok 55, 19.vii.1950; 1 ♂ (ZMUC), "[Greenland], Nya chip inlet, 21.vi.[19]17, Wülff (25.ii.[19]18)"; 1 ♂ (ZMUC), "Grønland, Søndre Sermilik, 60°38'N, 44°45'W, 24.viii.1982, Peter Nielsen"; 1 ♀ (ZMUC), "Grønland, Itelleg, 61°00'N, 45°31'W, 10-12.viii.1982, Peter Nielsen"; 1 ♂ (ZMUC), "Grønland, Qagssiarssuk, 61°09'N, 45°32'W, 26.vi.1983, Peter Nielsen"; 2 ♀♀ (ZMUC, RMNH), "Greenland, Kissuaq, 60°16'N, 44°14'W, 19-23.vii.1982, P. Nielsen"; 2 ♀♀ + 1 ♂ (ZMUC), "[Greenland], Sdr Strøml., (BW8), 26.vi.1952, 28, Chr. Vibe", "*Meteorus islandicus* Ruthe, Børge Petersen, det. 1959", but 1 ♀ "*Meteorus* n. sp., Børge Petersen, det. 1967"; 1 ♀ (ZMUC), id., but 22.vi.1952; 1 ♀ (RMNH), id., but 19.vi.1952; 3 ♀♀ (ZMUC), "[Greenland], Unurtok Kloster, 6.vii.1948 (2) & 11.vii.1948, Chr. Vibe"; 1 ♀ (ZMUC), "[Greenland], Igaliko, vii.1898, G. Meldorf, 6/10/1912"; 5 ♀♀ (ZMUC, RMNH), "Grønland, Holböll, Mus. Drews." (all with brownish cocoon); 2 ♂♂ (ZMUC, RMNH), "Vestgrønland, Nûgâtsiaq, 26.vii.1969, Jens Böcher"; 1 ♀ (ZMUC), "Vestgrønland, Umanak Fjord, Agpat, Umiangssup ilua, 23.vii.1969, Jens Böcher"; 1 ♂ (ZMUC), "Vestgrønland, Ingia Fjord, Puatglarsirup qôrua, 27.vii.1969, Jens Böcher"; 1 ♀ (ZMUC), "Vestgrønland, Disko Fjord, Eqalúnguit, 24.vii.1968, Jens Böcher"; 1 ♀ (ZMUC), "Vestgrønland, Svartenhuk øst, Kangiussap qingua, 16.viii.1968, Jens Böcher"; 1 ♀ (ZMUC), "Grønland, Mús. Drews."; 1 ♀ (ZMUC), "Greenland, Sondrestrom Air Base, 7.viii.1952, W.J. Brown"; 1 ♀ (ZMUC), "Grönlandia, Mus: Drews., af en Coleoptera"; 1 ♂ (ZMUC), "Greenland SE, near Skoldungen, Dr. Maries Dal, 27.vii-5.viii.1992, S. Andersen"; 2 ♀♀ (ZMUC, RMNH), "Greenland, Kap Farvel-området, Pamiagdhluk, Anordliuitsok, 64, 29.viii.1970, J. Böcher"; 4 ♀♀ (ZMUC), id., but 30II, 30.vii.1970; 1 ♀ (ZMUC), id., but 41, 1.viii.1970; 3 ♀♀ + 4 ♂♂ (ZMUC, RMNH), id., but 15-30.vii.1970; 1 ♀ (ZMUC), id., but 13a, 20.vii.1970; 3 ♀♀ (ZMUC), id., but 11 III, 19.vii.1970; 3 ♂♂ (ZMUC, RMNH), id., but 5a, Kangersuneq, Qingordleq, Igdlorsuit, 15.viii.1970; 1 ♀ + 1 ♂ (RMNH), id., but Kangilutsoq, Tupaussat (19), 25.vii.1970; 5 ♀♀ + 1 ♂ (ZMUC, RMNH), id., but 15, 23.vii.1950; 3 ♂♂ (ZMUC, RMNH), id., 27I, 28.vii.1970.

Notes.— The specimens from Greenland belong to the Holarctic *Meteorus rubens* (Nees, 1811) and the Nearctic *M. vulgaris* (Cresson, 1872) belongs here as well (**syn. nov.**). It is a commonly collected species, which is extremely variable in colour (normally largely yellowish but nearly completely blackish male specimens are common in Greenland, the females are normally partly yellowish-brown) and sculpture (the face and clypeus are normally distinctly sculptured, sometimes even the clypeus is transversely striate; but I have seen specimens with face and clypeus largely smooth). It has a shortened marginal cell (vein 1-R1 of fore wing 2.6-3.2 times as long as distance between apex of marginal cell and apex of fore wing) as *M. arcticus*, but the first tergite is more slender (fig. 175). Two aberrant females (from Bygden) have more robust hind femora than normal, however, in the same sample are normal specimens of both sexes. Very rarely vein r-m of the fore wing is absent. Sometimes the clypeus is more strongly convex than normal, resulting in a deep hypostomal suture if the face is also more convex than usual. A series from Greenland has been reared from *Rhyacia quadrangula* (Zetterstedt, 1839), a Noctuid known from Iceland, Greenland, Canada, NW U.S.A., C. Asia and Pamir.

Genus *Dinocampus* Foerster, 1862

* *Dinocampus coccinellae* (Schrank, 1802)
(figs 175-178)

Material.—3 ♀♀ (ZMUC, RMNH), “Greenland SW, Itivleq, eastern end, 66°33’N 52°26’W, 22-23.vii.2003, Kissavik Exp. ZMUC”.

Notes.—Koinobiont endoparasitoid of adult Coccinellidae able to re-parasitize its host beetle. A parthenogenetic species, but rarely males do occur.

Subfamily Hormiinae Foerster, 1862

Tribe Hormiini Foerster, 1862

Genus *Hormius* Nees, 1819

Hormius moniliatus (Nees, 1811)
(figs 20-24)

Hormius moniliatus: Nielsen, 1907: 388; Henriksen & Lundbeck, 1917: 545-546.

Material.—1 ♀ (ZMUC), “Greenland, Mestersvig, 3.vi.1953, C. Vibe”; 1 ♀ (RMNH), id., but 2.vi.1953; 1 ♀ (ZMUC), id., but 27.v.1953; 1 ♀ (ZMUC), “[Greenland], Narsarssuaq (B.W.I.), 29.v.1949, Chr. Vibe, 143”, “*Hormius moniliatus* Nees, Børge Petersen, det. 1959”; 1 ♀ (ZMUC), “[Greenland], Hekla Havn, 19.vi.[18]92, Deichmann”; 1 ♂ (ZMUC), id., but 11.viii.1891; 1 ♀ (RMNH), id., but 23.v.1892; 1 ♀ (ZMUC), id., but 25.vi.1892; 1 ♀ (ZMUC), [Greenland], Sukkertoppen, 6.vi.1949, Chr. Vibe, 201”, “*Hormius moniliatus* Nees, Børge Petersen, det. 1959”.

Notes.—A wide spread species in the West Palaearctic region.

Subfamily Microgastrinae Foerster, 1862

Tribe Microgastrini Foerster, 1862

Genus *Cotesia* Cameron, 1891

Key to Greenland species of the genus *Cotesia* Cameron

The key by Papp (1989) is problematical for the specimens examined, mainly because of the variation in the shape of the first metasomal tergite and in the sculpture of the notauli, which are more variable than anticipated. In addition two new species are included.

1. Hind femur of ♀ about 4.3 times as long as wide (fig. 70) and usually basally yellowish-brown, and more or less dark brown apically; penultimate segments of antenna of ♀ 1.6-1.8 times as long as wide (fig. 69); vein r of fore wing subvertical (fig. 68) *C. yakutatensis* (Ashmead, 1902)
- Hind femur of ♀ 3.0-4.0 times as long as wide and at least partly blackish or dark brown basally (fig. 71); penultimate segments of antenna of ♀ 1.0-1.7 times as long as wide (figs 82, 87, 92); vein r of fore wing pointed outwards (figs 86, 94) or subvertical (fig. 77) 2
2. First discal cell of fore wing comparatively high (fig. 77); vein r of fore wing subver-

- tical (fig. 77); outer side of hind femur with longitudinal yellowish streak; mesopleuron anteriorly and hind coxa smooth *C. fascifemorata* spec. nov.
- First discal cell of fore wing comparatively transverse (figs 78, 86, 94); vein r of fore wing pointing outwards (figs 86, 94); outer side of hind femur completely blackish; sculpture of mesopleuron anteriorly and hind coxa variable 3
 - 3. Frons smooth posteriorly; fore and middle femora of ♀ moderately slender (figs 88, 89, 95); upper margin of hind femur of ♀ nearly straight (fig. 90); segments of fore tarsus of ♀ comparatively slender (figs 91, 93); hind coxa usually matt dorsally and more or less rugulose; inner hind spur about as long as outer spur; mesopleuron usually distinctly sculptured anteriorly; sculpture of third tergite variable 4
 - Frons densely pimply (or rather punctate) posteriorly, very rarely reduced; fore and middle femora of ♀ robust (figs 79, 80); upper margin of hind femur of ♀ distinctly convex (fig. 81); segments of fore tarsus of ♀ robust (fig. 83); hind coxa shiny dorsally and more or less punctate; inner hind spur 1.2 times long as outer spur; mesopleuron usually sparsely sculptured anteriorly; third tergite more or less sculptured medially *C. crassifemorata* spec. nov.
 - 4. Inner hind tibial spur 0.5 times as long as hind basitarsus; third metasomal tergite shiny and largely smooth; vein cu-a of fore wing distinctly shorter than vein 1-CU1 of fore wing (fig. 86) *C. hallii* (Packard, 1877)
 - Inner hind tibial spur 0.6 times as long as hind basitarsus; third tergite matt and often distinctly sculptured; vein cu-a of fore wing often about as long as vein 1-CU1 of fore wing (fig. 94) *C. elinia* Papp, 1989

Cotesia crassifemorata spec. nov.
(figs 78-85)

Material.— Holotype, ♀ (ZMUC), "Greenland, Umanak, 9-28.vii.1970, P. Volsøe". Paratypes (12 ♀♀ + 18 ♂♂): 2 ♂♂ (ZMUC, RMNH), "Greenland, Qapiarfik, 19.ix.1969, C. Vibe"; 1 ♀ (ZMUC), "Greenland SE, Skjoldungen, Bygden, 19-27.vii.1992, S. Andersen"; 3 ♂♂ (ZMUC, RMNH), "Grønland, Narssarsuaq, 61.10 N, 45.25 W, 20.vi.1983, Peter Nielsen"; 1 ♀ (ZMUC), "Greenland W, Godhavn, Østerlien, 69°15'N, 53°34'N, 18.viii.1972, J. Böcher"; 1 ♂ (ZMUC), "Vestgrønland, Godhavn, Østerlien, 19.vii.1969, J. Böcher"; 5 ♂♂ (ZMUC, RMNH), id., but 22.vi.1968; 2 ♂♂ (ZMUC), id., but 28.vi.1969; 1 ♀ (ZMUC), id., but 15.vii.1969; 1 ♂ (ZMUC), id., but 16.vii.1969; 4 ♀♀ (ZMUC, RMNH), id., but 3.vii.1969; 6 ♀♀ + 3 ♂♂ (ZMUC, RMNH), id., but 8.vii.1969; 1 ♂ (ZMUC), id., but 4.vii.1969.

Holotype, ♀, length of body 2.4 mm, of fore wing 2.4 mm.

Head.— Antenna with 18 segments, 0.7 times as long as body, segments normally finely setose, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 1.9, 1.8 and 1.3 times their width, respectively (fig. 82); length of maxillary palp 0.6 times height of head, its three apical segments slender; mouthparts somewhat protruding; in dorsal view length of eye equal to length of temple; temple (but smooth near eye) and vertex finely pimply; area behind stemmaticum setose; OOL:diameter of ocellus:POL = 5:3:9; stemmaticum posteriorly much wider than laterally; frons largely smooth anteriorly and concave antero-medially; face distinctly densely pimply and setose, rather matt and densely pimply; clypeus superficially microsculptured; clypeus concave ventrally; labrum flat and largely smooth; malar suture absent and malar space mat and very finely and densely granulate; length of malar

space 0.8 times basal width of mandible; mandible strongly twisted apically.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum with complete Y-shape crenulate groove and remainder smooth; propleuron convex and densely finely rugulose; mesosternal sulcus narrow, moderately deep and smooth; prepectal carina and precoxal sulcus completely absent; mesopleuron superficially punctate and setose, but smooth and glabrous medially and postero-dorsally; pleural sulcus finely crenulate; metapleuron smooth dorsally (except for deep crenulate groove), remainder coarsely rugose and with deep submedial pit; mesoscutum densely and superficially punctate, becoming reticulate-rugulose at notaulic courses and with soft sheen, densely setose; notauli not impressed, only indicated by sculpture; scutellar sulcus moderately wide and with distinct crenulation; scutellum flat and smooth; side of scutellum with wide depression but rather narrowly crenulate, and lunula medium-sized and elliptical; metanotum straight anteriorly; antepropodeal suture smooth; propodeum coarsely irregularly reticulate, no areola, but costulae and median carina strongly developed.

Wings.— Fore wing: pterostigma 2.8 times longer than wide; r 1.4 times as long as 2-SR, straight and comparatively wide (fig. 78); 1-CU1:2-CU1 = 7:10, 1-CU1 longer than cu-a; 1-SR pointing to 2-CU1 (fig. 78); r-m and second submarginal cell completely absent; 1-R1 2.2 times distance of 1-R1 to SR1 and 0.9 times as long as pterostigma (fig. 78); first discal cell comparatively transverse (fig. 78). Hind wing: r at basal 0.3 of marginal cell; basal cell evenly setose but somewhat less densely than other cells; 2-SC+R subquadrate; M+CU:1-M = 20:27; cu-a curved basad; plical lobe with fringe and posterior margin weakly curved.

Legs.— Hind coxa rather shiny, punctulate (more densely so ventrally) and with some oblique striae postero-dorsally; tarsal claws simple and rather small; length of femur, tibia and basitarsus of hind leg 3.1, 6.0 and 4.8 times their width, respectively, femur dorsally distinctly convex (fig. 81); length of hind tibial spurs of unequal length, 0.7 and 0.6 times hind basitarsus; fore tarsus robust; hind femur pimply; all femora dorsally distinctly convex and very robust.

Metasoma.— Length of first tergite 0.8 times its apical width, parallel-sided, its apical width 1.7 times median length of second tergite (fig. 84), surface of its posterior 0.7 coarsely and densely reticulate; second tergite transverse (sculptured area 2.2 times wider than long) and largely reticulate-rugulose (fig. 84); second suture deep and coarsely crenulate; basal half of third tergite (except laterally) rugulose and remainder of metasoma smooth; length of ovipositor sheath 0.03 times (setose part) or 0.06 times (total exposed length) length of fore wing, and setose part 0.1 times hind tibia (fig. 85); ovipositor sheath somewhat widened, nearly parallel-sided (fig. 85); hypopygium of ♀ evenly sclerotised, medium-sized, with long setae and apically truncate (fig. 85).

Colour.— Black; labrum and mandible dark brown; palpi, tegulae, metasoma (except three basal tergites), ovipositor sheath, veins and pterostigma brown; legs mainly dark brown, but hind coxa, trochanter, trochantellus and femur black or brownish-black, and fore tibia and base of middle tibia yellowish-brown; middle and hind tibial spurs pale yellowish; wing membrane subhyaline.

Variation.— Length of body 1.8–2.4 mm, of fore wing 2.0–2.4 mm; length of ovipositor sheath 0.03–0.05 times (setose part) or 0.06 times (total exposed length) length of fore wing; outer side of hind coxa shiny and sparsely punctulate to mat and densely microsculptured; third tergite largely rugose to nearly completely smooth; males have hind

femur (as other femora) less swollen than that of female, less convex dorsally and 3.0-3.3 times as long as wide and veins r and 2-SR of fore wing slender.

Biology.— Unknown.

Notes.— Easily recognizable because of the very robust femora (figs 79-81). Runs in the key by Papp (1987) to *C. setebis* (Nixon, 1974), but this species has a more slender hind femur (with the dorsal border straight) and fore tarsus, the antennal segments somewhat more slender and the face smooth, with a satin lustre.

Cotesia elinia Papp, 1989
(figs 92-96)

Cotesia elinia Papp, 1989: 100-102, figs 17-20.

Material.— Holotype, ♀ (TMA), "Greenland, Scoresbysund", "4.viii.1985, D. Elin"; "Holotypus ♀ *Cotesia elinia* sp. n., Papp, 1989", "Hym. Typ. No. 7207 Museum Budapest"; 1 ♀ (ZMUC), "Greenland, Coloradodod, Cassiopehede, Fgl. 2, 2.viii.1994, J. Böcher"; 1 ♂ (ZMUC), id., but Eng.; 4 ♀♀ + 1 ♂ (ZMUC, RMNH), "Greenland, Eskimonaes, Kratlien, 29.v.1933, J. Brændegaard"; 1 ♀ (ZMUC), "Eskimonaes, Kratlien, 29.v.1933, Puppun fandtes fastkl. paa en Sten, 11.vi. [1933] fandtes de üdkl. Hvepse døde. Den 3 aarige Østgrøn. Exped."; 1 ♂ (ZMUC), "Ø. Grønland, Godthaab, Sommertogl 1932, Nordfjord, 29.vii.1932, [J.] Brændegaard"; 1 ♂ (RMNH), "Greenland SE, Skjoldungen, Bygden, 19-27.vii.1992, S. Andersen"; 1 ♀ + 2 ♂♂ (ZMUC, RMNH), "Greenland NE, Zackenberg, 74°28'N 20°34'W, 1.viii.1991, J. Böcher" (♀: Fgl. Dryas-hede); 1 ♀ (RMNH), "Greenland, Nordøstgrønland, Ella Ø, vii.1958, C. Vibe"; 1 ♀ (ZMUC), Greenland SW, Godhavn, 69°15'N 55° 34'W, 20.vii.1992, J. Böcher"; 1 ♂ (ZMUC); "Greenland, Mestersvig, 6.vi.1953, C. Vibe"; 1 ♂ (ZMUC), "Thule, 25.vii.1951, 29, Chr. Vibe"; 2 ♀♀ + 1 ♂ (ZMUC, RMNH), "Marrait (Nugssuaq), 17.vii.1949, 543, Chr. Vibe".

Notes.— Very close to *C. hallii* (Packard) and weakly sculptured specimens may easily be confused with this species. The hind femur is hardly convex dorsally and 3.6-4.0 times as long as wide.

Cotesia fascifemorata spec. nov.
(figs 71-77)

Material.— Holotype, ♀ (ZMUC), "Greenland SW, 62°54'N 50°09'W, Bjørnesund, Eqaqut, 28-29.vi.2003, Kissavik Exp., ZMUC".

Holotype, ♀, length of body 2.6 mm, of fore wing 2.6 mm.

Head.— Antenna with 18 segments, 0.7 times as long as body, segments normally finely setose and apical segments distinctly moniliform, third segment 1.1 times as long as fourth segment, length of third, fourth and penultimate segments 2.1, 2.0 and 1.1 times their width, respectively (fig. 75); length of maxillary palp 0.5 times height of head, its three apical segments rather robust; mouthparts shortly protruding; in dorsal view length of eye equal to length of temple and parallel-sided behind eyes; temple and vertex mainly smooth and shiny, partly finely pimply; area behind stemmaticum glabrous; OOL:diameter of ocellus:POL = 6:4:9; stemmaticum posteriorly much wider than laterally; frons largely smooth anteriorly and concave antero-medially; face and clypeus shiny smooth and somewhat pimply; clypeus concave ventrally; labrum flat and smooth; malar suture absent and malar space mat and very finely and densely granulate; length

of malar space 0.7 times basal width of mandible; mandible strongly twisted apically.

Mesosoma.— Length of mesosoma 1.3 times its height; side of pronotum smooth and oblique groove distinct and micro-crenulate, dorsal groove smooth and shallow; propleuron convex and pimply; mesosternal sulcus narrow, shallow and nearly smooth; prepectal carina absent; precoxal sulcus as short subvertical crenulate groove; mesopleuron smooth and glabrous medially and postero-dorsally, remainder setose and slightly pimply, pleural sulcus very finely crenulate; metapleuron smooth dorsally, remainder rugose and with a deep submedial pit; mesoscutum shiny, mainly smooth posteriorly, densely setose and anteriorly with dense and superficial microsculpture; notauli absent; scutellar sulcus unknown [not visible because of pin]; scutellum flat and sparsely punctulate, posteriorly with a smooth and strongly shiny band; side of scutellum with a wide crenulate depression, and lunula medium-sized and elliptical; antepropodeal suture narrow and smooth; propodeum medio-anteriorly narrowly smooth, remainder distinctly rugose, without areola or costulae but median carina present.

Wings.— Fore wing: pterostigma 2.5 times longer than wide; r 1.2 times as long as 2-SR, straight (fig. 77); 1-CU1:2-CU1 = 5:7, 1-CU1 longer than cu-a; 1-SR pointing to 2-CU1 or cu-a (fig. 77); r-m and second submarginal cell completely absent; 1-R1 3.5 times distance of 1-R1 to SR1 and 0.9 times as long as pterostigma (fig. 77); first discal cell comparatively high (fig. 77). Hind wing: r at basal 0.4 of marginal cell; basal cell evenly setose but somewhat less densely than other cells; 2-SC+R somewhat longer than wide; M+CU:1-M = 5:6; cu-a weakly curved basad; plical lobe with fringe and posterior margin weakly curved.

Legs.— Hind coxa smooth and strongly shiny, with some punctulation; tarsal claws slender and setose; length of femur, tibia and basitarsus of hind leg 3.2, 5.5 and 5.2 times their width, respectively, femur hardly convex dorsally (fig. 71); length of hind tibial spurs of equal length, 0.6 times hind basitarsus; fore tarsus moderately robust (figs 72-73)); hind femur largely smooth and shiny, partly superficially pimply.

Metasoma.— Length of first tergite about equal to its apical width, somewhat widened basally and apically not narrowed, its apical width 1.7 times median length of second tergite (fig. 74), surface of its posterior 0.7 rugose-punctate; second tergite transverse (sculptured area 1.9 times wider than long) and largely punctate except medially (fig. 74); second suture distinct and hardly crenulate; third tergite and remainder of metasoma smooth; length of ovipositor sheath 0.02 times (setose part) or 0.06 times (total visible length) length of fore wing, and setose part 0.06 times hind tibia; ovipositor sheath weakly widened, nearly parallel-sided; hypopygium of ♀ evenly sclerotised, medium-sized, not protruding beyond apex of metasoma, with long setae and apically truncate.

Colour.— Black; palpi (but basally dark brown), tegulae, fore and middle legs (except coxa up to basal half of femur, and telotarsus), basal half of hind tibia brownish-yellow; longitudinal medial streak of hind femur yellowish-brown; remainder of legs (except coxae) and tegulae more or less dark brown; pterostigma and veins 1-CU1, 2-CU1, r, 2-SR and 1-R1 dark brown, remainder of veins and parastigma pale brown or yellowish; veins of hind wing hardly pigmented; wing membrane subhyaline.

Biology.— Unknown.

Notes.— Easily recognisable because of the moniliform apical half the antenna of the female. Runs in the key by Papp (1986) to *C. kazak* (Telenga, 1949), but this species

has the apical third of the antenna of the female not moniliform, veins 1- and 2-CU1 of fore wing without any pigmentation (as the surrounding veins), the outer side of the hind femur evenly dark brown, the propodeum (except narrowly anteriorly) strongly declivous and a long vein r of fore wing. *C. brevicornis* (Wesmael, 1837) has a similar antenna, but has the apical third of the first metasomal tergite distinctly narrowed, veins 1-R1 and C+SC+R of the fore wing distinctly paler than the pterostigma and the fore tarsus more slender.

Cotesia hallii (Packard, 1877)
(figs 86-91)

Apanteles Hallii; Lundbeck, 1897: 245; Henriksen & Lundbeck, 1917: 547.

Cotesia hallii; Papp, 1989: 102.

Material.— 1 ♀ (ZMUC), “Thule, 29.vii.1951, 40, Chr. Vibe”; 1 ♀ (ZMUC), id., but 7.vii.1952, 49; 1 ♂ (ZMUC), id., but 24.vii.1951, 33; 1 ♀ + 1 ♂ (ZMUC), “Vestgrønland, Godhavn, Østerlien, 8.vii.1969, J. Böcher”; 1 ♀ (ZMUC), “Ø-Grønland, 23.vii.1947, Sankodden, Ved Danneborg, P. Johnsen”; 1 ♀ (RMNH), “Greenland, Coloradodal, Fgl. 5, 2.viii.1994, J. Böcher”; 1 ♂ (ZMUC), “Greenland, Jamesonland, Muslingeelvbugt, Fgl. 2, 26.vii.1994, J. Böcher”; 1 ♀ (ZMUC, bleached), “Greenland, Thule, Højfeldet, Sødalen lok. 32, 26.vii.1951, C. Vibe”; 1 ♂ (ZMUC), “Østgrønland, Faxe sø, Ganselandet, 1958, Chr. Vibe”; 3 ♂ ♂ (ZMUC, RMNH), “Vestgrønland, Godhavn, 28.vi.1969 (1 ♂; 2 ♂ ♂ 26.vii.1969), J. Böcher”; 1 ♂ (ZMUC), “Sarqaq, Kùgssuak, 5.vii.1949, 383, Chr. Vibe”; 1 ♀ (ZMUC), “Heklahavn, 19.vi.[18]92, Deichmann”.

Notes.— Close to *C. eliniae* Papp, but has the inner hind tibial spur 0.5 times as long as the hind basitarsus, the third metasomal tergite shiny and largely smooth, vein cu-a of the fore wing distinctly shorter than vein 1-CU1 of the fore wing (fig. 86) and the outer side of the hind coxa largely rugulose or densely punctate. Vein 1-SR of fore wing is distinctly longer than wide and pointing to vein cu-a in specimens from Greenland, but in Canadian specimens hardly longer than wide and pointing to vein 2-CU1; one ♀ from Greenland has vein 1-CU1 as long as vein 2-CU1, about vein 1-CU1 is 0.7 times as long as 2-CU1. Wide spread species in Greenland.

Cotesia yakutatensis (Ashmead, 1902)
(figs 68-70)

Cotesia yakutatensis; Papp, 1989: 102.

Notes.— No specimens seen from Greenland, but reported from Greenland by Papp (1989). *C. yakutatensis* has vein 1-SR of the fore wing distinctly longer than wide and pointing to vein cu-a (fig. 68), the lateral lobe of the mesoscutum densely punctate and the third metasomal tergite largely smooth basally.

Genus *Protapanteles* Ashmead, 1898

Key to Greenland species of the genus *Protapanteles* Ashmead

1. First metasomal tergite largely subparallel-sided, slightly narrowed apically and flattened subapically (figs 99, 100); vein cu-a of hind wing subvertical (fig. 98); vein

- 1-SR of fore wing much longer than wide (fig. 97); vein r of fore wing distinctly longer than vein 2-SR (fig. 97); anterior half of propodeum partly smooth and shiny; segments of fore tarsus of ♀ short and fore tibial spur comparatively wide and reaching apex of fore basitarsus (fig. 104) *P. immunis* (Haliday, 1834)
- First tergite largely narrowed apically and rather convex subapically (figs 103, 107, 115, 116); vein cu-a of hind wing strongly curved basad (figs 110, 118); vein 1-SR of fore wing hardly longer than wide (fig. 106) or longer (fig. 117); vein r of fore wing about as long as vein 2-SR or shorter (figs 106, 117); anterior half of propodeum matt and coriaceous or shiny and partly rugose; segments of fore tarsus of ♀ usually elongate (fig. 113) and fore tibial spur comparatively slender and remaining removed from apex of fore basitarsus (fig. 113) 2
 - 2. Posterior half of mesoscutum strongly shiny and more or less punctate; median carina of propodeum irregular and usually distinct at least anteriorly; vein 1-SR of fore wing pointing to vein 1-CU1 (fig. 106); scutellum sparsely setose and rather narrow; hind femur less slender (fig. 109) *P. pallipes* (Reinhard, 1880)
 - Posterior half of mesoscutum with satin sheen and usually mainly impunctate (usually only laterally with some punctures); median carina of propodeum largely absent and weakly developed, if intermediate then regular; vein 1-SR of fore wing pointing to vein 2-CU1 (fig. 117); scutellum densely setose and comparatively wide; hind femur slender (fig. 114) *P. fulvipes* (Haliday, 1834)

Protopanteles fulvipes (Haliday, 1834)
(figs 112-118)

Apanteles fulvipes; Lundbeck, 1897: 245; Henriksen & Lundbeck, 1917: 547; Granger, 1952: 57; Petersen, 1956: 57.

Material.— 1 ♀ + 2 ♂♂ (ZMUC), “Greenland, Lollandselv, flg. Hede, 18.viii.1994, J. Böcher”; 1 ♂ (ZMUC), id., but 18.viii.1994; 1 ♂ (ZMUC), id., but flg 14, 8.vii.1994; 1 ♂ (ZMUC), “Greenland, Colorado, Jamesonland, 2.viii.1994, J. Böcher”; 4 ♀♀ + 1 ♂ (ZMUC, RMNH), “Greenland S, Narsarsuaq, 14-27.vii.2004, T. Munk”; 1 ♀ (ZMUC), “Greenland, Kap Farvel-området, Kangarsuneq, Qingordleq, Igdlorsuit, 46, 17.vii.1970, J. Böcher”; 1 ♀ + 3 ♂♂ (ZMUC), “Greenland, Østgrønland, Godhab, Nordfjord, 1.viii.1932, J. Brændegaard”; 1 ♂ (ZMUC), id., but Brogede Dal, 28.vii.1932; 1 ♀ (ZMUC), “Vestgrønland, Godhavn, Østerlien, 9.iv.1992, Jens Böcher”; 1 ♂ (ZMUC), “Østgrønland, Charcotsland, 4.viii.1958, C. Vibe”; 3 ♂♂ (ZMUC), id., but 7.viii.1958; “; 1 ♂ (ZMUC), “Østgrønland, Rypefjord, 19.viii.1958, Chr. Vibe”; 1 ♂ (ZMUC), “Østgrønland, Gaaselandet, Faxe sø, 1958, Chr. Vibe”; 1 ♀ (ZMUC), “Greenland SW, Kangerdluarssuk, 66°59'N 53°12'W, 24-25.vii.2003, Kissavik Exp. ZMUC”; 1 ♀ (ZMUC), “Greenland SW, Evighedsfjord, Tasiussaq, 65°52'N 52°47'W, 19-21.vii.2003, Kissavik Exp. ZMUC”; 1 ♂ (ZMUC), id., Perdlertfiup, kangerdluc, 25.viii.1968, Jens Böcher; 1 ♂ (ZMUC), id., but 19-20.vii.2003, Kangerdluc; 1 ♀ + 1 ♂ (ZMUC), “Greenland SW, 63°21'N 50°59'W, Grædefjord, Nugssuaq, 4.vii.2003, Kissavik Exp., ZMUC”; 2 ♀♀ (ZMUC, RMNH), id., but islet Nugssuaq, 5.vii.2003; 2 ♀♀ (ZMUC, RMNH), “Greenland SW, 64°08'N 50°29'W, Ameralik, Eqaluit ilordlit, 7-8.vii.2003, Kissavik Exp., ZMUC”; 2 ♂♂ (ZMUC, RMNH), “Greenland SW, 65°28'N 52°12'W, Søndre Isortoq, Nuk, 13-14.vii.2003, Kissavik Exp., ZMUC”; 3 ♂♂ (ZMUC, RMNH), “Vestgrønland, Umanak Fjord, Inukavsait, Sagdlaruseq, 21.viii.1968, Jens Böcher”; 1 ♀ + 1 ♂ (ZMUC), “Vestgrønland, Svartenhuk øst, Kangerdluc, 16.viii.1968, Jens Böcher”; 1 ♀ + 5 ♂♂ (ZMUC, RMNH), “[Greenland], Disko Bugt, Pikkerat, Kangarsuneq, 14.viii.1958 (16), Jens Böcher”; 1 ♀ + 1 ♂ (ZMUC), id., but 22.viii.1958 (29); 1 ♂ (ZMUC), id., but 20.viii.1958; 1 ♂ (ZMUC), id., but Palitsoq, 6.viii.1958 (12); 1 ♂ (ZMUC), “[Greenland], Thule, 27.vii.1951, 39, Chr. Vibe”; 1 ♂ (ZMUC), “[Greenland], Tigssaluk, 6.viii.1954, T. Andersen (G.Z.U.)”, “*Apanteles fulvipes*

Hal., Børge Petersen, det. 1959", "*Apanteles fulvipes* Hal., G.E.J. Nixon, det. 1960"; 1 ♂ (ZMUC), "[Greenland], Røde Q., 17.viii.[18]92, Deichmann", "*Apanteles fulvipes* Hal., G.E.J. Nixon, det. 1960"; 1 ♀ + 1 ♂ (ZMUC), "[Greenland], Hekla Havn, 11.viii.[18]91, Deichmann", "*Apanteles fulvipes* Hal., G.E.J. Nixon, det. 1960"; 4 ♀ ♀ + 6 ♂ ♂ (ZMUC, RMNH), "Greenland, Sondrestrom Air Base, vii.1952, W.J. Brown", "ex Noctuid", "*Apanteles fulvipes* Hal., G.E.J. Nixon, det. 1960"; 1 ♀ (ZMUC), " [Greenland], Ikerasausak, 14.viii.1933, M. Jørgensen", "*Apanteles fulvipes* Hal., Børge Petersen, det. 1959"; 2 ♀ ♀ (ZMUC, RMNH), "[Greenland], Sarqaq, Kùgssuak, 16.vi.1949, 252, Chr. Vibe", 1 ♀ mislabelled with "*Ichn. Aurivilli* m. var. A. Roman det."; 2 ♀ ♀ + 4 ♂ ♂ (ZMUC, RMNH), "Greenland East, Île de France, Kap Saint Jacques, 25.vii-14.viii.1988, Thomas Berg"; 1 ♂ (ZMUC), "Greenland SE, near Skoldungen, Dr Maries Dal, 27.vii-5.viii.1992, S. Andersen"; 2 ♂ ♂ (ZMUC), "Greenland SE, Skoldungen, Bygden, 19-27.vii.1992, S. Andersen"; 1 ♂ (ZMUC), id., but Qornoq, 5-12.viii.1992; 1 ♂ (ZMUC), "[Greenland], Kristianshaab, 4. viii.[18]90"; 1 ♂ (ZMUC), id., but 1.viii.1890.

Notes.— The propodeum is largely regularly more or less obliquely striate in Greenland specimens; in European specimens the propodeum is usually more irregularly rugose or rugulose. The hind femur may be darkened dorsally or the whole hind leg is dark brown. Rather dark specimens may run to the Palaearctic *P. nivalis* (Papp, 1983), but *P. fulvipes* has the hind femur 5 times as long as wide and the area of the second tergite comparatively narrow. The pale brownish cocoons form an irregular heap.

* *Protapanteles immunis* (Haliday, 1834)
(figs 97-102, 104)

Material.— 1 ♀ (ZMUC), "[Greenland], Skaftafell, 16.vi.1956", "*Apanteles* sp., ♀, Børge Petersen, det. 1959", "*Apanteles immunis* Hal., G.E.J. Nixon, det. 1960"; 1 ♀ (ZMUC), "[Greenland], Kvisker, 7.vii.1957" [head missing].

Notes.— One specimen has the hind femur largely dark brown and the other (from Kvisker) has the typical colouration with the hind femur largely brownish-yellow, only dorsally and ventro-basally dark brown.

Protapanteles pallipes (Reinhard, 1880)
(figs 103, 105-111)

Glyptapanteles pallipes; Papp, 1989: 96.

Notes.— Recently reported by Papp (1989) but no specimens found in the ZMUC collection.

Tribe Microplitini Mason, 1981
Genus *Microplitis* Foerster, 1862

Key to Greenland species of the genus *Microplitis* Foerster

1. Hind femur distinctly inflated and short (fig. 42); antenna of ♀ very short, submedial segments about as wide as long (fig. 45); face densely punctate; first tergite shiny and largely smooth; fore tarsal segments short (fig. 43); [cocoons white, without longitudinal ribs] *M. coactus* (Lundbeck, 1896)

- Hind femur normal (figs 46, 55); antenna of ♀ medium-sized, submedial segments distinctly longer than wide (figs 49, 53, 58); face densely and finely rugulose; first tergite usually less shiny and more or less microsculptured (except apically); fore tarsal segments normal to rather robust (figs 48, 52, 57) 2
- 2. Basal half of antenna (after pedicellus) largely yellowish-brown; hind femur brownish-yellow; apical border of third and following tergites ivory laterally; hind tarsus brownish-yellow or infusate; fore basitarsus slender (fig. 48); [first tergite comparatively robust, apical third of first metasomal tergite weakly convex medially and tergite weakly or not narrowed apically; cocoons brown and with distinct longitudinal ribs] *M. mandibularis* (Thomson, 1895)
- Basal half of antenna (after pedicellus) largely dark brown; hind femur dark brown; apical border of third and following tergites orange or/and dark brown, respectively; hind tarsus largely dark brown; fore basitarsus comparatively robust (figs 52, 57) 3
- 3. Penultimate antennal segments of ♀ hardly longer than wide; first tergite comparatively slender (fig. 64), apical third of tergite strongly convex medially and rather narrowed apically; colour of basal third of pterostigma variable 4
- Penultimate antennal segments of ♀ nearly twice longer than wide (fig. 53); first tergite comparatively robust, apical third of tergite weakly convex medially and tergite weakly or not narrowed apically; basal 0.3-0.4 of pterostigma yellow, contrasting with dark brown remainder of pterostigma (fig. 51) *M. sofron* Nixon, 1970
- 4. First subdiscal cell of fore wing comparatively wide compared to first discal cell (fig. 60); pterostigma largely or completely dark brown basally (fig. 60); vein r of fore wing strongly inclivous, forming an acute angle with anterior margin of pterostigma (fig. 60); vein r-m of fore wing comparatively long, resulting in a more or less quadrangular second submarginal cell (fig. 60); hind femur comparatively robust (fig. 59); vein 2-SR of fore wing less oblique; vein m-cu about as long as vein 2-SR+M; clypeus normally convex *M. lugubris* (Ruthe, 1860)
- First subdiscal cell of fore wing normal compared to first discal cell (fig. 67); basal third of pterostigma distinctly yellowish basally (fig. 67); vein r of fore wing subvertical or weakly oblique, forming a rectangular angle with anterior margin of pterostigma or nearly so (fig. 67); vein r-m of fore wing comparatively short, resulting in a more or less triangular second submarginal cell; hind femur less robust (fig. 67); vein 2-SR of fore wing more oblique; vein m-cu somewhat longer than vein 2-SR+M; clypeus strongly convex *M. lugubroides* spec. nov.

Microplitis coactus (Lundbeck, 1896)
(figs 41-45)

Microgaster (*Microplitis*) *coactus* Lundbeck, 1896: 243.

Microplitis coactus; Henriksen & Lundbeck, 1917: 546-547; Granger, 1952: 57; Papp, 1989: 95.

Material.— 7 ♀♀ (ZMUC), "Grönland, Müs. Drews.", "Paralectotypus ♀ *Microplitis coactus* Lundb., 1896, Papp, 1981"; 1 ♀ (ZMUC), "Greenland SW, 63°55'N 50°55'W, Buksefjorden, east, 6.vii.2003, Kissavik Exp., ZMUC"; 2 ♀♀ (ZMUC, RMNH), "Greenland SW, 63°22'N 50°56'W, Grædefjord, islet Nugssuaq, 5.vii.2003, Kissavik Exp., ZMUC"; 1 ♀ (ZMUC), id., but Nugssuaq, 4.vii.2003; 2 ♀♀ (ZMUC, RMNH), "Vestgrønland, Disko Bugt, Akugdlit, 5.vii.19897, Jens Böcher"; 5 ♀♀ (ZMUC), id., but Qeqertassussuk,

68°35'N 51°05'W, 6-12.viii.1987; 1 ♀ (ZMUC), "Greenland, Narssarsuaq, 61°10'N, 45°25'W, 6.viii-6.ix.1985, P. Nielsen"; 1 ♀ (ZMUC), id., but 16.vii.1983; 1 ♀ (RMNH), id., but 17.vii-6.viii.1985; 2 ♀ ♀ (ZMUC, RMNH), id., but 1.viii-6.ix.1985; 3 ♀ ♀ (ZMUC), id., but 5.vi-17.vii.1985; 1 ♀ (ZMUC), id., but 1.viii.1983; 1 ♀ (ZMUC), id., but 20.vi.1983; 1 ♀ (ZMUC), "Greenland, Grønnedal, 400-500 m, 4.vii.1950, C. Vibe"; 1 ♀ (ZMUC), "Greenland, Upernaviarsuk, 60°45'N, 45°54'W, 24.vii.1983, P. Nielsen"; 1 ♀ (RMNH), id., but 2-26.vii.1984; 1 ♀ (ZMUC), "Greenland, Qagssiarssuk, 61°09'N, 45°32'W, 26.vi-21.vii.1984, P. Nielsen"; 2 ♀ ♀ (ZMUC), id., but 22.vii.1983; 1 ♀ (ZMUC), id., but 18.viii.1983; 7 ♀ ♀ (ZMUC, RMNH), "Greenland SE, Skjoldungen, Bygden, 19-27.vii.1992, S. Andersen"; 1 ♀ (ZMUC), "Greenland, Engelskmandens Havn, 9.viii.1969, J. Böcher"; 1 ♂ (ZMUC), "Greenland, Qapiarfik, 16.ix.1969, C. Vibe"; 1 ♀ (ZMUC), "Greenland SE, Skoldungen, Dr. Marries Dal, 27.vii-5.viii.1992, S. Andersen"; 4 ♀ ♀ (ZMUC, RMNH), "Greenland, Umanak, 9-28.vii.1970, P. Volsøe"; 8 ♀ ♀ (ZMUC, RMNH), "Greenland, Kap Farvel-området, Pamiagdliuk, Anordliutisoq, 121, 20.vii.1970, J. Böcher"; 1 ♀ (ZMUC), id., but 15-30.vii.1970; 1 ♀ (ZMUC), id., but 30.vii.1970; 2 ♀ ♀ (ZMUC), id., but 7.viii.1970; 1 ♀ (ZMUC), id., but 3.viii.1970; 2 ♀ ♀ (ZMUC), id., but 19.vii.1970; 5 ♀ ♀ (ZMUC, RMNH), "Greenland, Nanortakk, 30.vii.1948, C. Vibe"; 1 ♀ (ZMUC), "Greenland W, Sarqaq, Kapisigdlit, 1.viii.1973, J. Böcher"; 1 ♀ (ZMUC), "Greenland SG, Narssarsuaq, 61°12'N, 50°40'W, 1991, J. Böcher"; 2 ♀ ♀ (ZMUC, RMNH), "Greenland, Narssarsuaq, Hospitalsdalen, 10 m.o.h., 61°10'N 45°25'W, 16-24.vii.1984, P. Nielsen"; 1 ♂ (ZMUC), id., but 24.vii-12.viii.1984; 1 ♀ (ZMUC), id., but 5-16.vii.1984; 4 ♀ ♀ (ZMUC), id., but 4.vii.1983; 1 ♀ (ZMUC), "Greenland WG, Søndre Strømfjord, 67°02'N, 45°24'W, 2.viii.1992, J. Böcher"; 1 ♀ (ZMUC), id., but 18-21.vii.1984; 1 ♀ (ZMUC), Greenland SW, Godhavn, 69°15'N 55°34'W, 20.vii.1992, J. Böcher".

Notes.— The most commonly collected species of the genus *Microplitis* on Greenland. Reported as a parasitoid of a Noctuid caterpillar; the cocoons are white or pale brownish and have no ribs.

* *Microplitis lugubris* (Ruthe, 1860)
(figs 57-60)

Material.— 1 ♀ (ZMUC), "Greenland, Nordøstgrønland, Ella Ø, vii.1958, C. Vibe"; 1 ♀ (ZMUC), "[Greenland], Neqe, 18.vii.1941, Chr. Vibe"; 1 ♂ (ZMUC), "[Greenland], Mestersvig, 2.vi.1953, Chr. Vibe", "*Microplitis coactus* Lundb., Børge Petersen, det. 1959"; 1 ♀ (RMNH), "1257", no locality indicated but supposed to be from Greenland; 1 ♂ (ZMUC), unlabelled, "*Microplitis mandibularis* P.N. Buhl, det. 1996"; 1 ♂ (ZMUC), "Greenland NE, Zackenberg, 78°28'N 20°34'W, 1.viii.1991, J. Böcher".

* *Microplitis lugubroides* spec. nov.
(figs 61-67)

Material.— Holotype, ♀ (ZMUC), "Greenland WG, Disko Bugt, Qeqertassussuk, 68°35'N 51°05'W, 6-12.viii.1987, J. Böcher". Paratypes (7 ♀ ♀ + 16 ♂ ♂): 4 ♀ ♀ + 1 ♂ (ZMUC, RMNH), topotypic and with same date; 1 ♂ (ZMUC), "[Greenland], Kapisigdlit, 800 m, 3.viii.1950, Chr. Vibe"; 1 ♀ + 7 ♂ ♂ (ZMUC, RMNH), "Vestgrønland, Isfjord, Torssukátak, 26, 27 or 28.vii.1949, 816, Chr. Vibe"; 1 ♂ with ", "*Microplitis coactus* Lundb., Børge Petersen, det. 1959" and 3 ♂ ♂ with ", "*Microplitis mandibularis* Th., Papp, det. 1979"; 4 ♂ ♂ (ZMUC, RMNH), "Vestgrønland, Uvkusigssat Fjord, Pangnertôq, 18-19.vii.1968, Jens Böcher"; 1 ♀ (ZMUC), "Greenland, Amitsukiaq, Umanak Fjord, 7.viii.1967, J. Böcher"; 1 ♀ + 1 ♂ (ZMUC, RMNH), "Vestgrønland, Umanak Fjord, Itivdlarssuk, 7.viii.1967, Jens Böcher"; 1 ♂ (ZMUC), "Vestgrønland, Ingia Fjord, Puatglarsîriup qôrua, 27.vii.1969, Jens Böcher"; 1 ♂ (RMNH), "Vestgrønland, Svartenhuk øst, Kangiussap qingua, 15.viii.1968, Jens Böcher".

Holotype, ♀, length of body 2.6 mm, of fore wing 2.6 mm.

Head.— Antenna with 18 segments, 0.8 times as long as body, segments normally finely adpressed setose, length of third segment 1.2 times fourth segment, length of

third, fourth and penultimate segments 2.6, 2.2 and 1.5 times their width, respectively (fig. 62); length of maxillary palp 0.7 times height of head, its three apical segments medium-sized; mouthparts somewhat protruding; in dorsal view length of eye 0.9 times length of temple; temple (but less so near eye) pimply and vertex punctate, matt; area behind stemmaticum glabrous; OOL:diameter of ocellus:POL = 2:1:3; stemmaticum posteriorly much wider than laterally; frons largely smooth and concave antero-medially, matt and pimply posteriorly; face distinctly densely rugulose and setose; matt and densely pimply; clypeus superficially microsculptured, rather shiny, strongly convex and subtruncate ventrally; malar suture slightly impressed and malar space matt and mainly rugulose; length of malar space 1.3 times basal width of mandible; mandible strongly twisted apically.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum with only an oblique crenulate groove and the remainder largely smooth; propleuron convex and densely finely rugulose; mesosternal sulcus wide, deep and crenulate; prepectal carina absent; precoxal sulcus distinct medially, moderately crenulate, absent anteriorly and posteriorly; mesopleuron coriaceous and setose below precoxal sulcus, punctate dorsally, but area behind precoxal sulcus smooth and glabrous; pleural sulcus coarsely crenulate; metapleuron smooth anteriorly (except for deep crenulate groove with deep pit), remainder coarsely rugose; mesoscutum matt and coriaceous, with weak median carina, becoming densely reticulate-rugose at notaulic courses and with soft lustre, densely setose; notauli not impressed, only indicated by sculpture; scutellar sulcus rather wide and with distinct crenulation; scutellum slightly convex and coriaceous; side of scutellum with a wide depression and widely crenulate, and lunula narrow elliptical; metanotum straight anteriorly; antepropodeal suture smooth; propodeum coarsely vermiculate rugose, no areola, but transverse and median carina strongly developed.

Wings.— Fore wing: r 0.8 times as long as 2-SR, slightly oblique, angle with anterior side of pterostigma nearly rectangular (fig. 67); 2-SR strongly oblique; 1-CU1:2-CU1 = 7:10, 2-CU1 distinctly curved; 1-SR pointing to base of 2-CU1 (fig. 67); second submarginal cell subtriangular; 2-SR+M rather long (fig. 67); 1-R1 about equal to distance of 1-R1 to SR1 (fig. 67); first subdiscal cell normal compared to first discal cell (fig. 67). Hind wing: 1-SC+R strongly curved basally; r at basal 0.3 of marginal cell; basal cell evenly setose but somewhat less densely so than other cells; 2-SC+R slightly longer than wide; M+CU:1-M = 20:35; cu-a weakly curved basad; plical lobe with fringe and posterior margin distinctly curved.

Legs.— Hind coxa mainly smooth, with some punctures dorsally; tarsal claws rather small and simple, setose; length of femur, tibia and basitarsus of hind leg 4.2, 6.8 and 5.6 times their width, respectively (fig. 63); length of hind tibial spurs of equal length, 0.4 times hind basitarsus; fore tarsus robust in dorsal view and moderately so in lateral view (fig. 61); hind femur pimply; all femora rather slender.

Metasoma.— Length of first tergite 1.8 times its maximum width and 2.9 times its apical width, subparallel-sided basally, with a large polished apical knob, latero-medially distinctly rugose and the remainder smooth, distinctly convex subapically (figs 64, 66) and distinctly narrowed apically (fig. 64), median length of second tergite 2.1 times apical width of first tergite, surface of its posterior 0.7 of first tergite coarsely and densely reticulate; second and following tergites smooth and with a subapical row of setae; second suture absent; length of ovipositor sheath 0.01 times (setose part) or 0.06 times

(total exposed length) length of fore wing, and only apically setose, exposed part 0.2 times hind tibia (fig. 65); ovipositor sheath rather narrow, nearly parallel-sided (fig. 65); hypopygium of ♀ evenly sclerotised, with medium-sized setae laterally and apically with a lamella and truncate (fig. 65).

Colour.— Black; palpi, tegulae, legs (but trochantelli and tibiae mainly brown) veins and pterostigma (except yellow basal third) dark brown; wing membrane subhyaline.

Variation.— Length of body 2.3–2.6 mm, of fore wing 2.3–2.7 mm.

Notes.— Does not fit a species in the key by Muesebeck (1922) for the Nearctic species; in the key by Nixon (1970) for the European species it runs to *M. sofron*, but it does not fit there (for the differences see the key above).

* *Microplitis mandibularis* (Thomson, 1895)
(figs 46–50)

Material.— 1 ♀ (ZMUC), "Grønland", "*Microplitis mediator* Hal., Børge Petersen, det. 1959".

Notes.— The only examined specimen has a typically ribbed and brownish cocoon connected to the pin.

Microplitis mediator (Haliday, 1834)

Microplitis mediator Lundbeck, 1897: 243; Henriksen & Lundbeck, 1917: 546.

Notes.— Reported by Lundbeck (1897) but without any additional information; probably it concerns a misidentified *M. mandibularis* (Thomson). No specimens are available for examination, except for the ♀ reported under *M. mandibularis*, which might have been seen by Lundbeck (1897).

Microplitis sofron Nixon, 1970
(figs 51–56)

Microplitis sofron; Papp, 1984: 108.

Notes.— Once reported by Papp (1984) but no additional information and no specimens available.

Subfamily Rogadinae Foerster, 1862
Tribe Rogadini Foerster, 1862
Genus *Aleiodes* Wesmael, 1838

Key to Greenland species of the genus *Aleiodes* Wesmael

1. Clypeus strongly convex (fig. 40); stemmaticum distinctly protruding above level of vertex (fig. 40); head roundly narrowed below eyes in anterior view; area of precoxal sulcus distinctly rugose; tarsal claws narrowly brownish pectinate; third antennal segment robust (fig. 40) *A. spec. near signatus* (Nees)

- Clypeus weakly convex (fig. 30); stemmaticum weakly protruding above level of vertex (fig. 30); head linearly narrowed below eyes in anterior view (fig. 34); area of precoxal sulcus granulate or rugulose; tarsal claws setose; third antennal segment normal (fig. 30); [antenna of ♀ with 32-33 segments, of ♂ with 38-39 segments]
..... *A. borealis* (Thomson, 1892) s. lato

Aleiodes borealis (Thomson, 1892) sensu lato
(figs 29-36)

Rhogas (*Aleiodes*) *borealis*; Granger, 1952: 57.

Material.— 1 ♀ (ZMUC), id., but 61°10'N, 45°25'W, 20.vi.1983, P. Nielsen; 1 ♂ (ZMUC), id., but 13.viii.1983, "*Rogas borealis* Thoms., Børge Petersen, det. 1986"; 1 ♀ (ZMUC), "[Greenland], Kapisigdlit, 13.vii.1950, 39, 200 m, Chr. Vibe"; 1 ♀ (ZMUC), "Greenland, Sondrestrom Air Base, 23.vii.1952, W.J. Brown", "*Rogas borealis* Thoms. (sculp. m. typen), Børge Petersen, det. 1957".

Notes.— The clypeus is comparatively wide (fig. 34) compared to that of *A. pictus* (Herrich-Schäffer, 1838), the precoxal sulcus has rugulae and the hind trochanter and trochantellus are nearly always dark brown. Similar to *A. arcticus* (Thomson, 1892) but this species has the hind femur swollen and the head completely black. The group is currently under revision and the specimens from Greenland are provisionally included under *A. borealis*. Granger (1952) reported 5 males from Greenland, which may belong here.

A. spec. near signatus (Nees, 1811)
(figs 37-40)

Material.— 1 ♀ (ZMUC), "[N Greenland,] Wulffs Land [= Wulff Land Peninsula, 82°00'N, 48°00'W], vii.1917, 25/218, P. Trenchen".

Notes.— This specimen probably represents a new species but because of the sub-optimal condition of the only specimen available I refrain from describing it.

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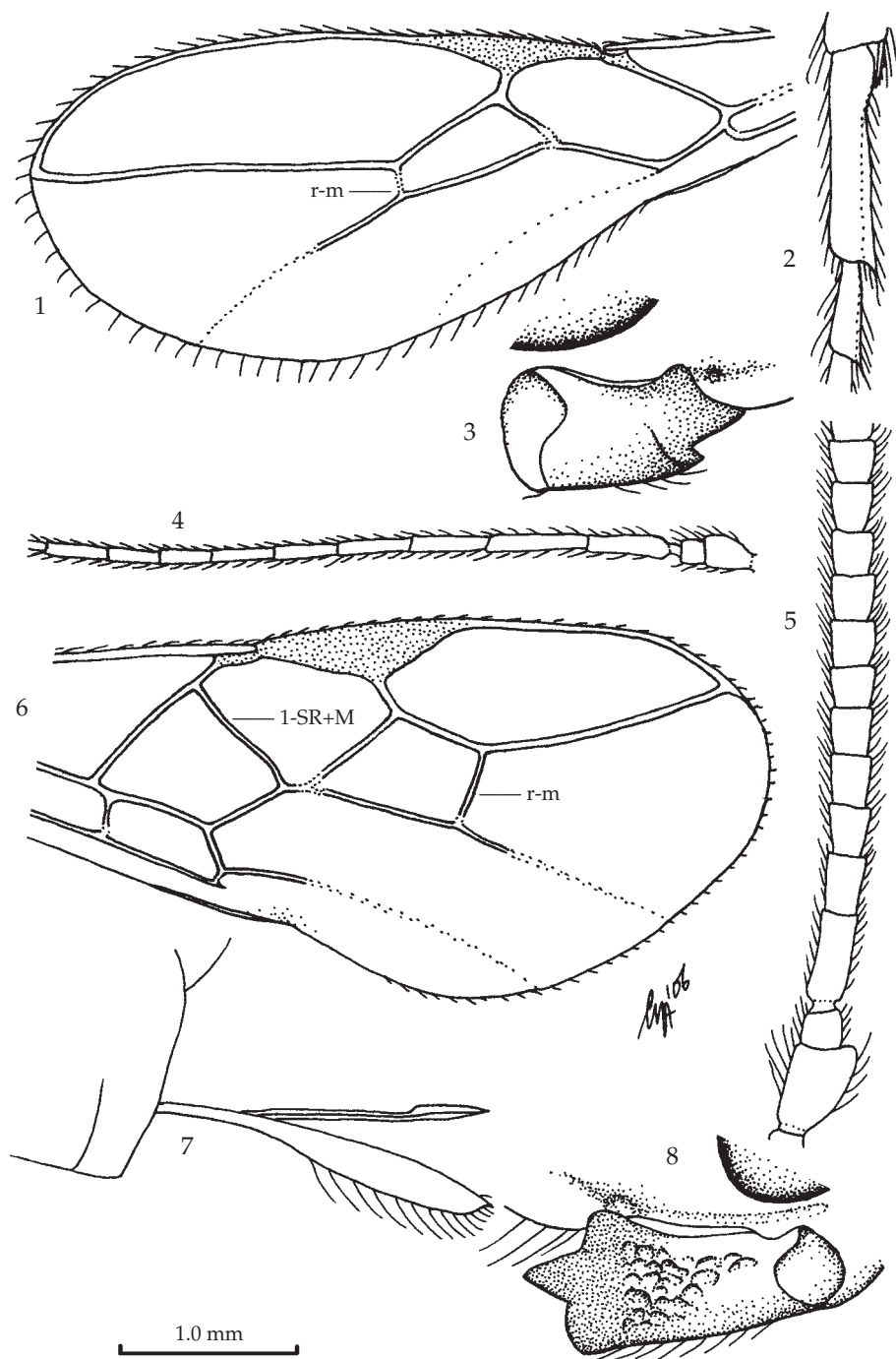
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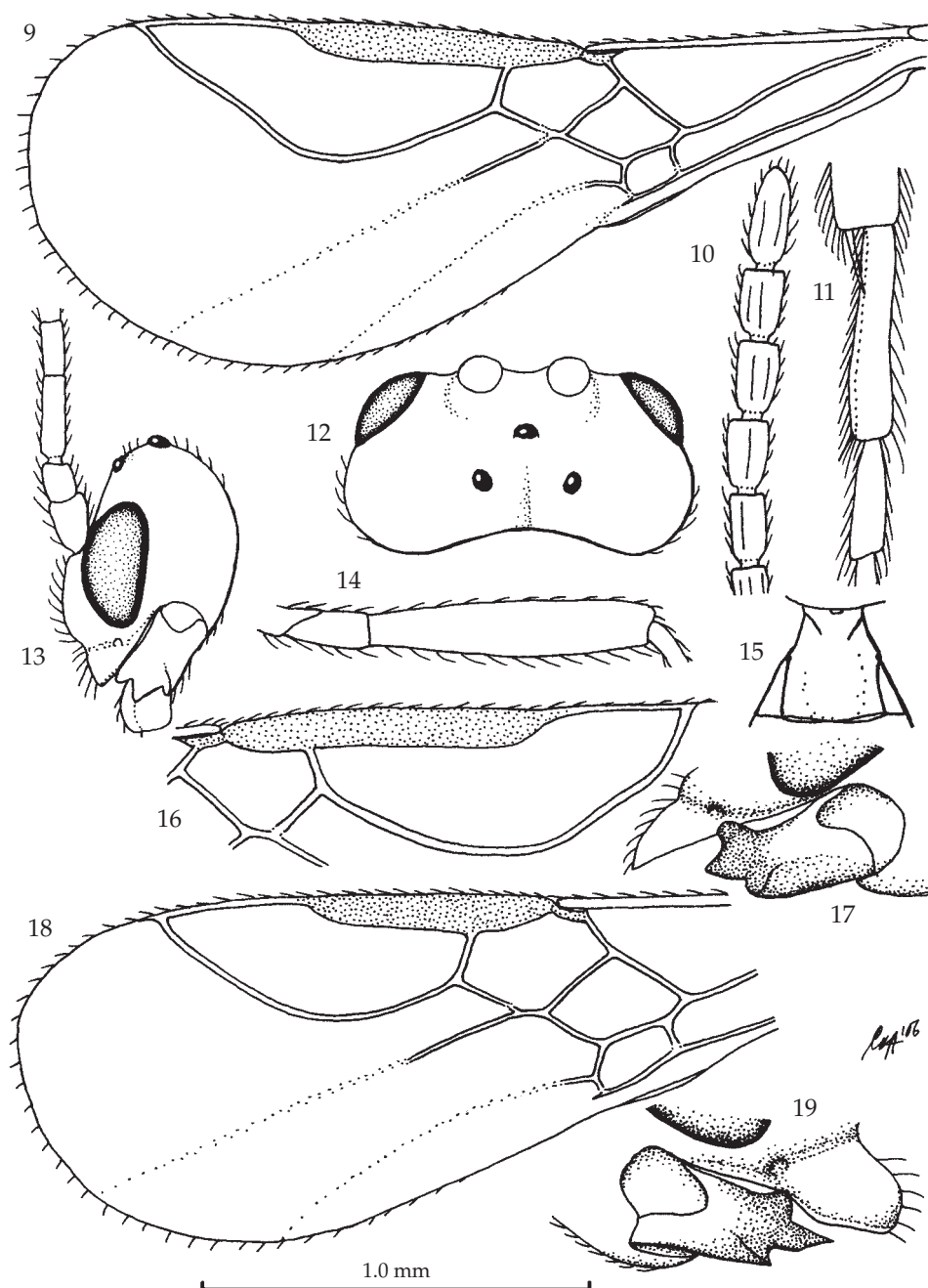
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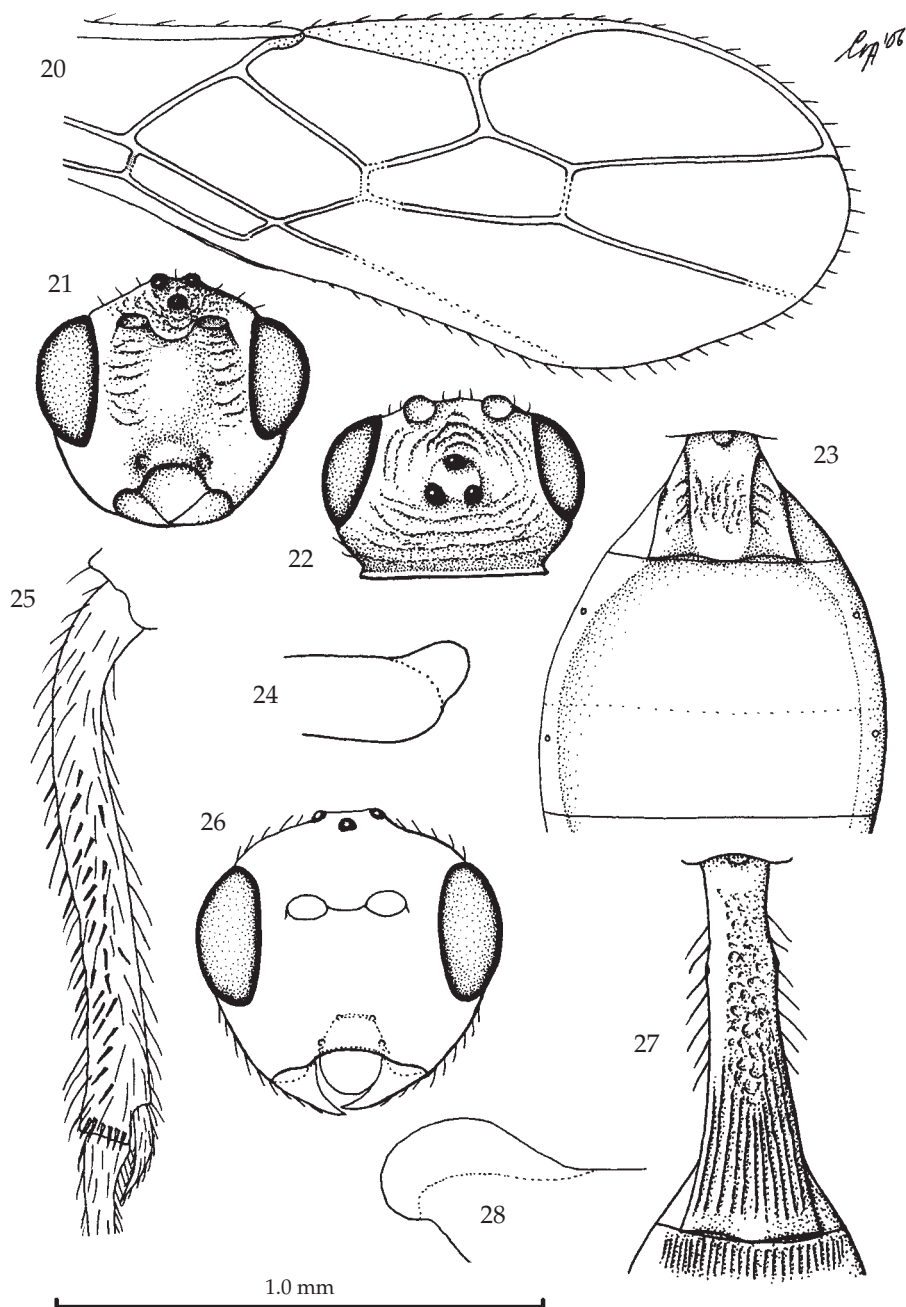
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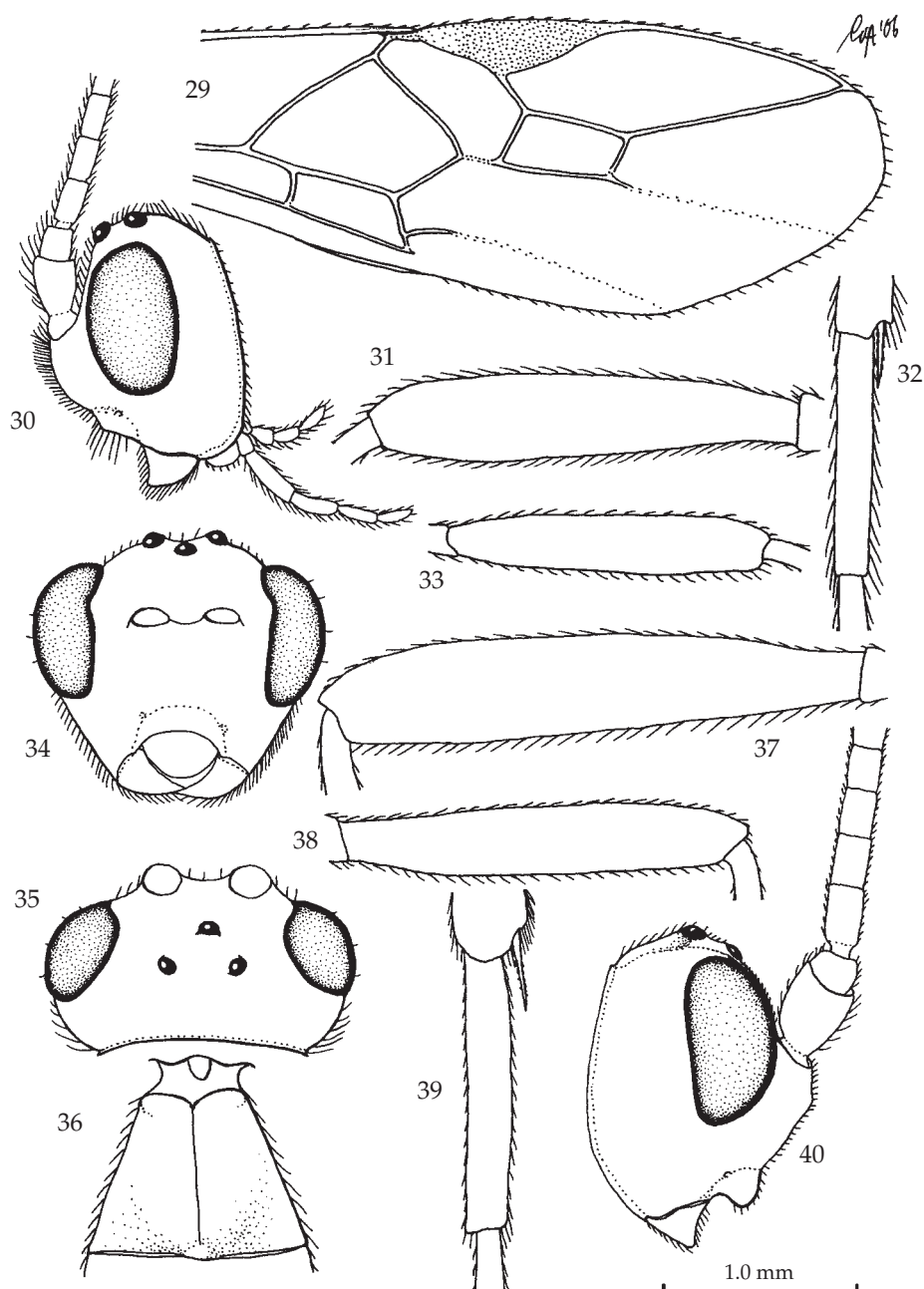
Figs 1-4, *Aphaereta minuta* (Nees), ♀, Greenland, Evighedsfjorden; figs 4-8, *Alysia alticola* (Ashmead), ♀, S Greenland, Narsarsuaq. 1, 6, fore wing; 2, hind basitarsus, lateral aspect; 3, 8, mandible; 4, 5, base of antenna; 7, ovipositor and its sheath, lateral aspect. 1, 4: 2.4 × scale-line; 2, 3: 3.8 ×; 5, 7, 8: 2.2 ×; 6: 1.0 ×.



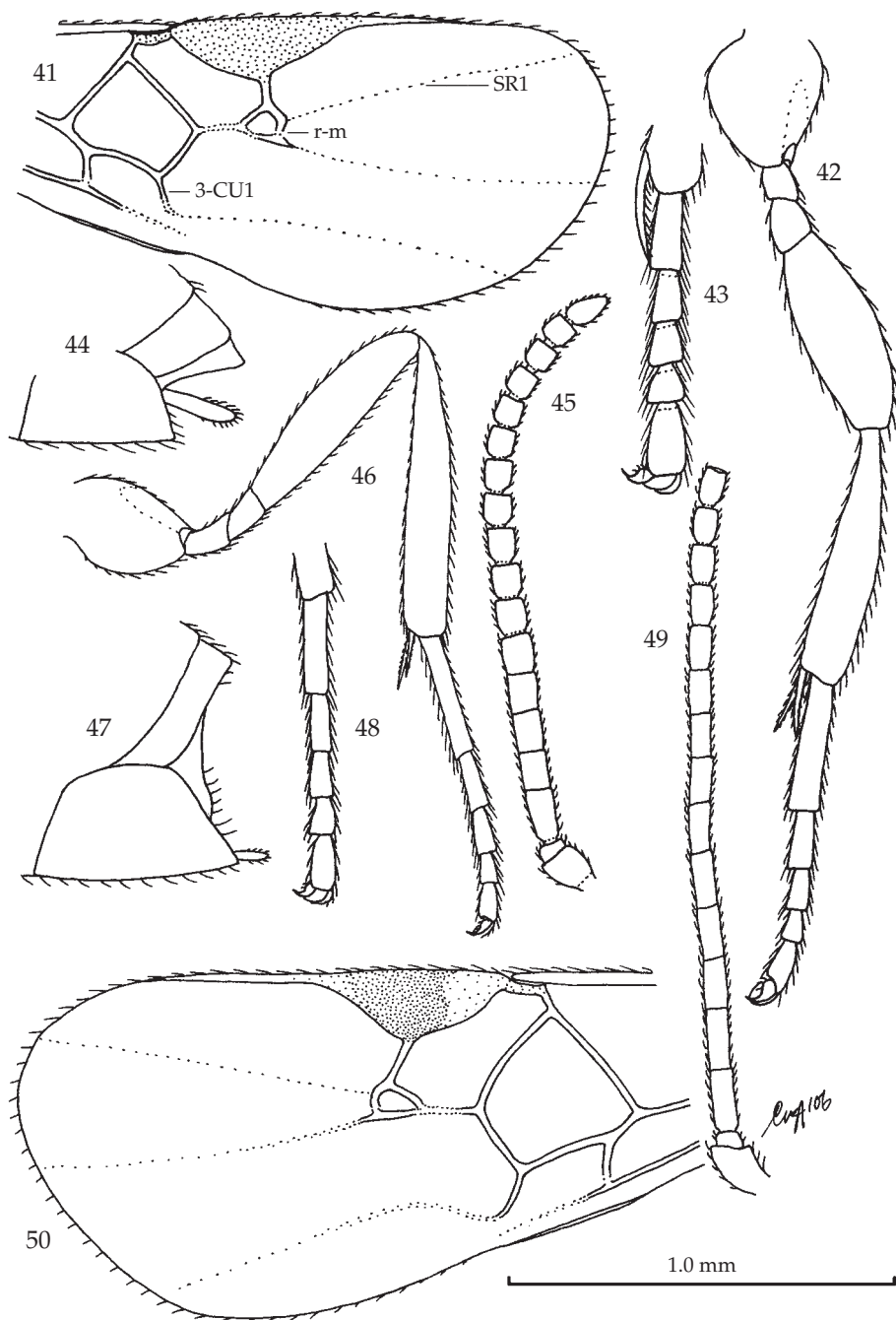
Figs 9-17, *Dacnusa groenlandica* spec. nov., ♀, holotype, but 16 of ♂, paratype; figs 18-19, *Chorebus* spec. near *cytherea* (Nixon), ♀, N Greenland, Thule. 9, 18, fore wing; 10, apex of antenna; 11, hind basitarsus, lateral aspect; 12, head, dorsal aspect; 13, head, lateral aspect; 14, hind femur, lateral aspect; 15, first metasomal tergite, dorsal aspect; 16, detail of pterostigma; 17, 19, mandible, full view on first tooth. 9, 16, 18: 1.0 × scale-line; 10, 11, 17, 19: 2.3 ×; 12-14: 1.5 ×; 15: 1.2 ×.



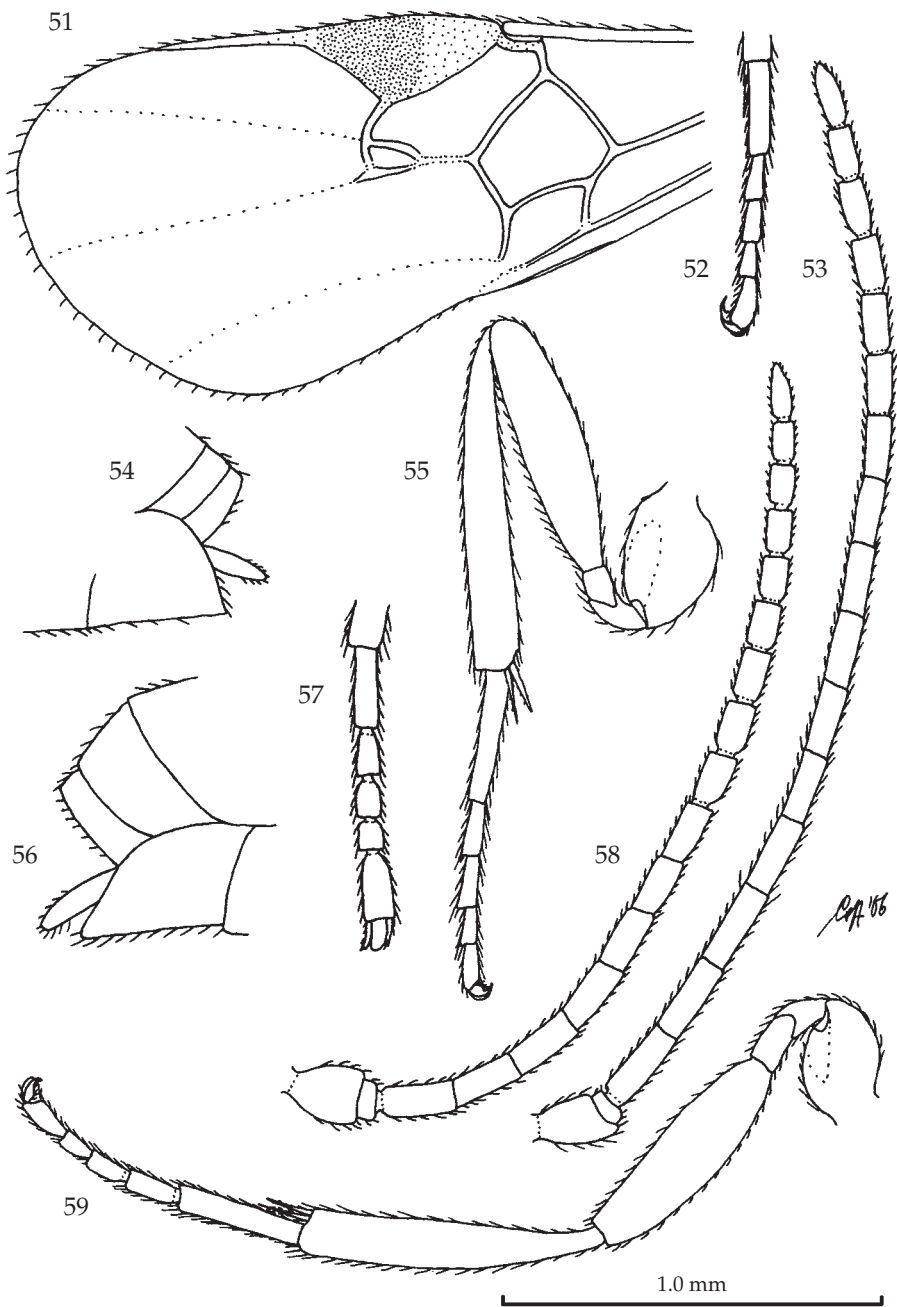
Figs 20-24, *Hormius moniliatus* (Nees), ♀, neotype, but 24 of ♀, Greenland, Mestersvig; figs 25-28, *Spathius exarator* (Linnaeus), ♀, Netherlands, Melissant. 20, fore wing; 21, 26, head, anterior aspect; 22, head, dorsal aspect; 23, first-third metasomal tergites, dorsal aspect; 24, 28, propleural flange; 25, fore tibia, anterior aspect; 27, first metasomal tergite, dorsal aspect. 20-23, 25, 28: 1.0 × scale-line; 24: 2.1 ×; 26: 1.6 ×; 27: 0.9 ×.



Figs 29-36, *Aleiodes borealis* (Thomson) s. lato, ♀, S Greenland, Narsarsuaq; figs 37-40, *A. spec.* near *signatus* (Nees), ♀, N Greenland, Wulff Land Peninsula. 29, fore wing; 30, 40, head, lateral aspect; 31, 37, hind femur, lateral aspect; 32, 39, hind basitarsus, lateral aspect; 33, 38, fore femur, lateral aspect; 34, head, anterior aspect; 35, head, dorsal aspect; 36, first metasomal tergite, dorsal aspect. 29: 1.0 × scale-line; 30, 34-36: 1.2 ×; 31-33: 2.0 ×; 37, 38, 40: 1.5 ×; 39: 1.8 ×.



Figs 41-45, *Microplitis coactus* (Lundbeck), ♀, S Greenland, Narssarssuaq; figs 46-50, *M. mandibularis* (Thomson), ♀, Greenland. 41, 50, fore wing; 42, 46, hind leg; 43, fore tarsus, lateral aspect; 44, 47, ovipositor sheath; 45, 49, antenna; 48, fore tarsus, dorsal aspect. 41-45, 47, 48: 1.0 × scale-line; 46, 49: 0.6 ×; 50: 0.9 ×.



Figs 51-56, *Microplitis sofron* Nixon, ♀, Spain, Briviesca; figs 57-59, *M. lugubris* (Ruthe), ♀, Greenland, Neqé . 51, fore wing; 52, fore tarsus , lateral aspect; 53, 58, antenna; 54, 56, ovipositor sheath; 55, 59, hind leg; 57, fore tarsus , dorsal aspect. 51, 53, 55, 58, 59: 1.0 × scale-line; 52, 54, 56, 57: 1.1 ×.

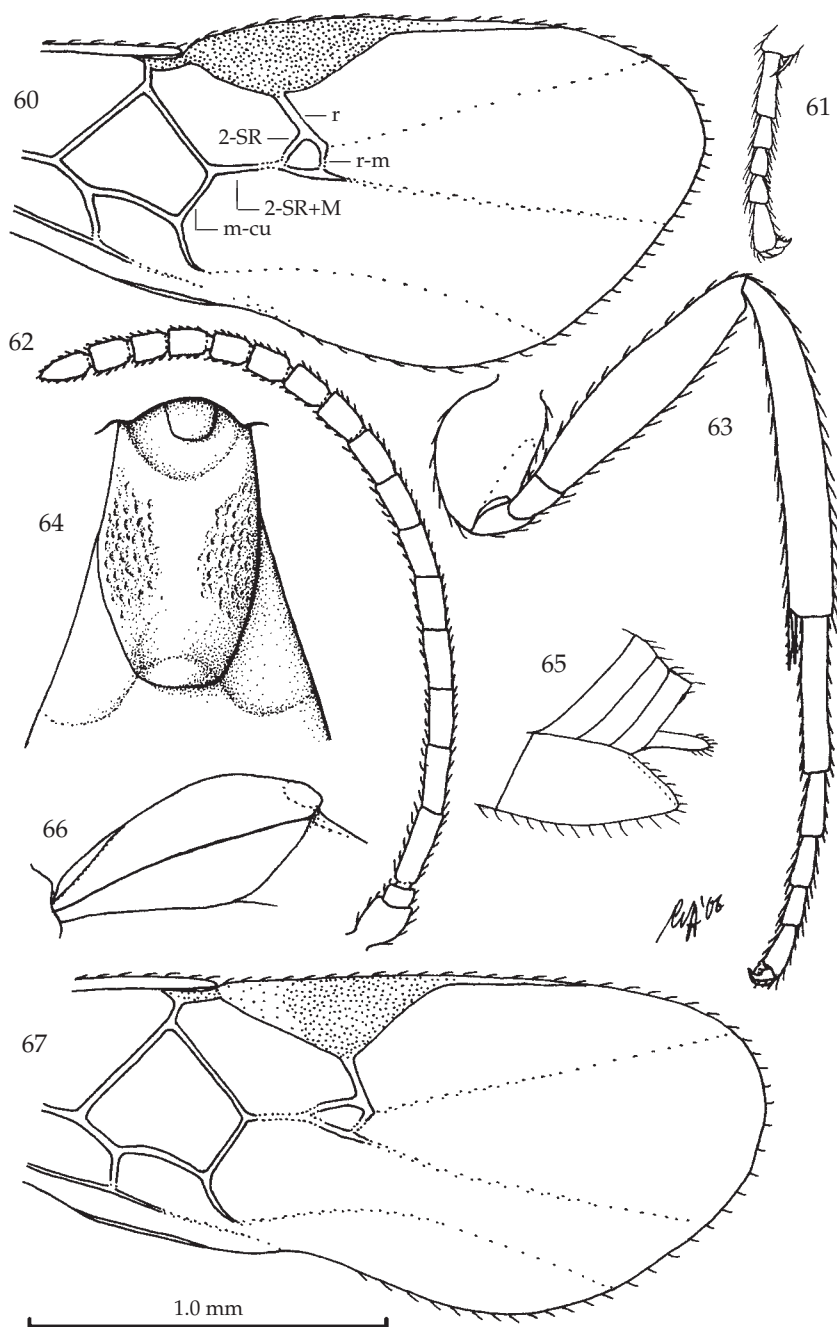
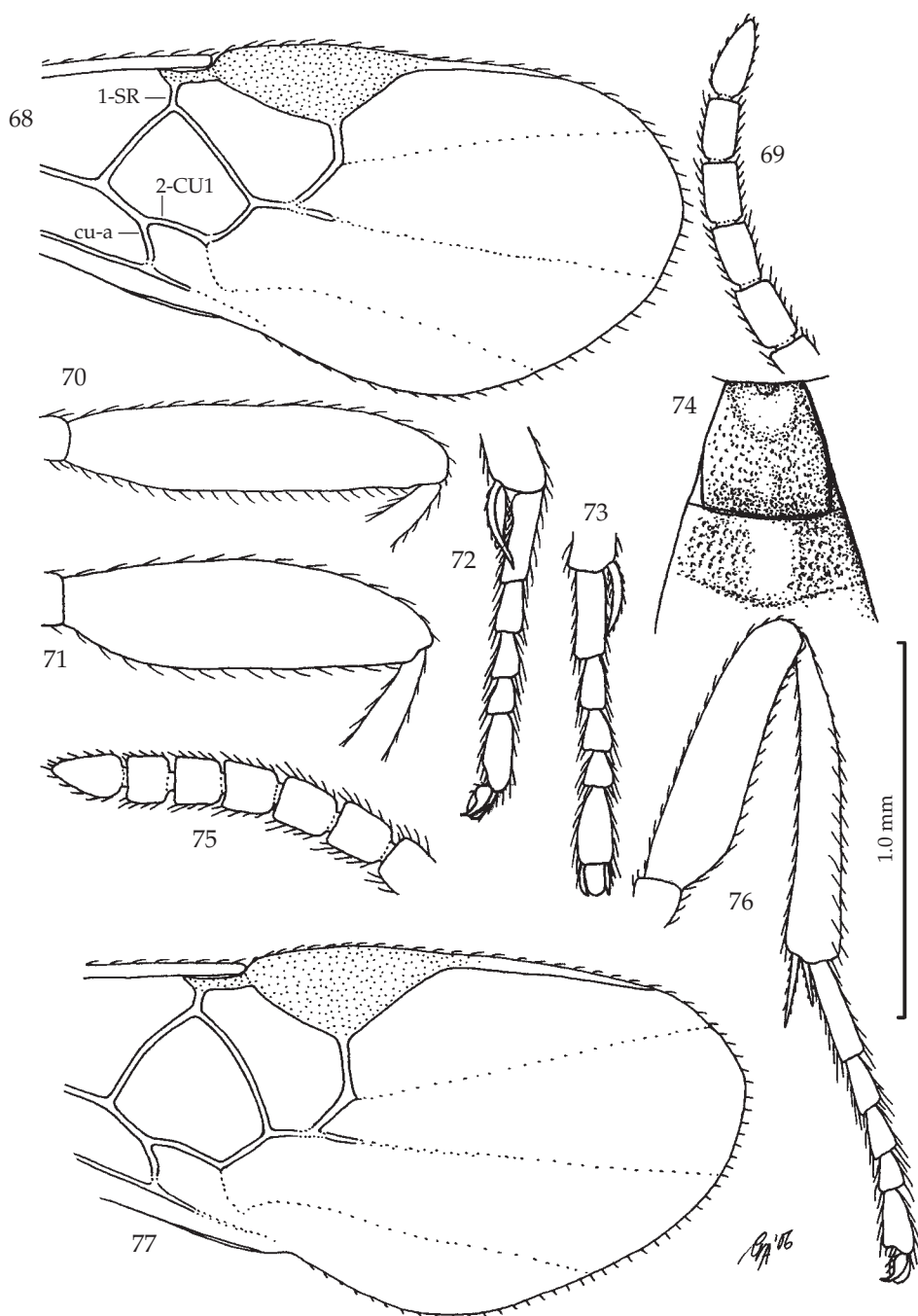
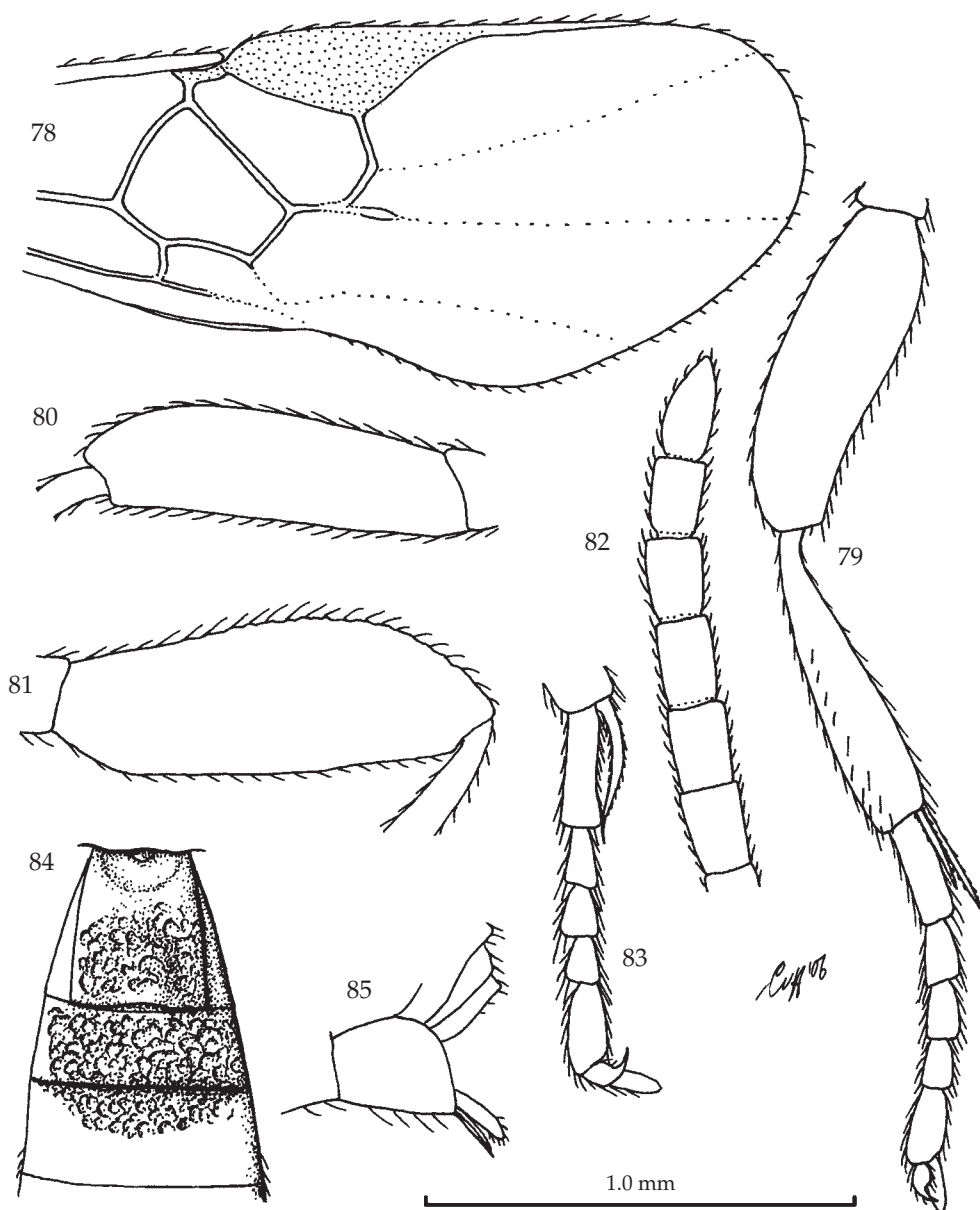


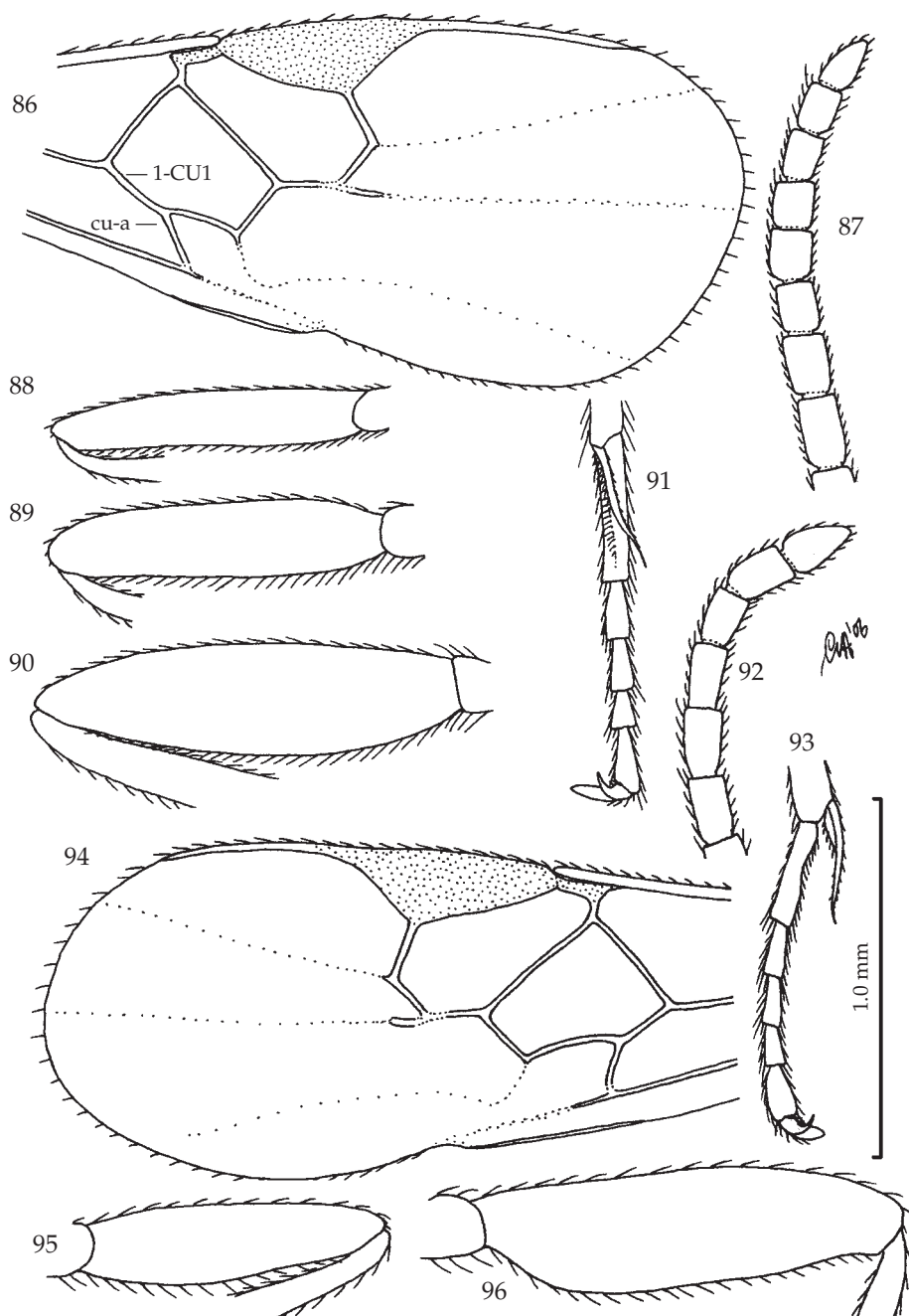
Fig. 60, *Microplitis lugubris* (Ruthe), ♀, Greenland, Neqé; figs 61-67, *M. lugubroides* spec. nov., ♀, holotype. 60, 67, fore wing; 61, fore tarsus, lateral aspect; 62, antenna; 63, hind leg; 64, first metasomal tergite; 65, ovipositor sheath, lateral aspect; 66, first tergite, lateral aspect. 60: 1.0 × scale-line; 61-63, 65, 67: 1.2 ×; 64, 66: 1.6 ×.



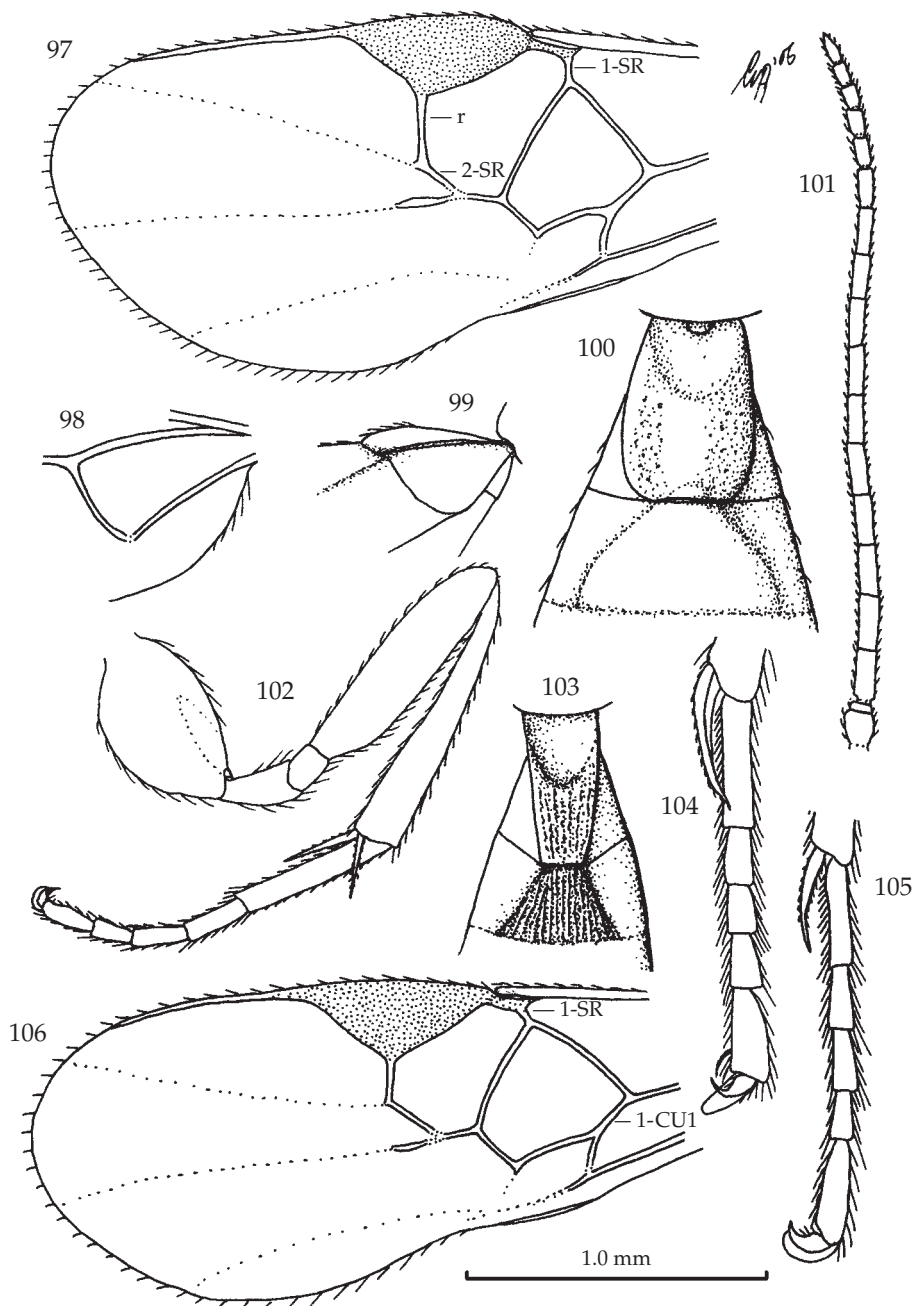
Figs. 68-70, *Cotesia yakutatensis* (Ashmead), ♀, Canada, Quebec, Gt. Whale R.; figs 71-77, *C. fascifemorata* spec. nov., ♀, holotype. 68, 77, fore wing; 69, 75, apex of antenna; 70, 71, hind femur, lateral aspect; 72, fore tarsus, lateral aspect; 73, fore tarsus, dorsal aspect; 74, first and second metasomal tergites, dorsal aspect; 76, middle leg, lateral aspect. 68, 77: 1.0 × scale-line; 69, 71, 76: 1.5 ×; 70: 1.4 ×; 72, 73: 1.7 ×; 74: 1.1 ×; 75: 1.9 ×.



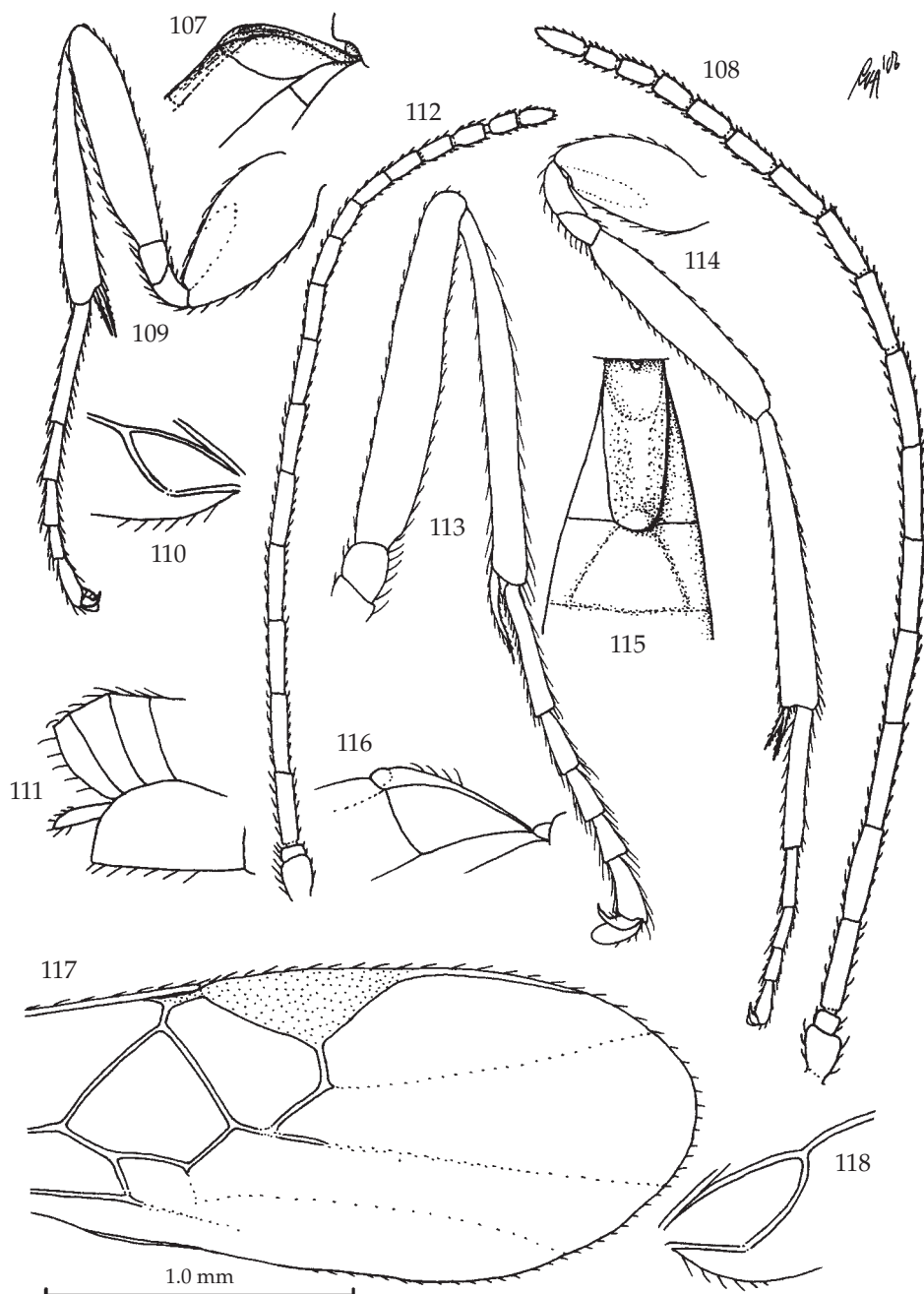
Figs. 78-85, *Cotesia crassifemorata* spec. nov., ♀, holotype. 78, fore wing; 79, middle leg, lateral aspect; 80, fore femur, lateral aspect; 81, hind femur, lateral aspect; 82, apex of antenna; 83, fore tarsus, lateral aspect; 84, first-third metasomal tergites, dorsal aspect; 85, ovipositor sheath. 78, 84: 1.0 × scale-line; 79-81: 1.5 ×; 82, 83, 85: 1.9 ×.



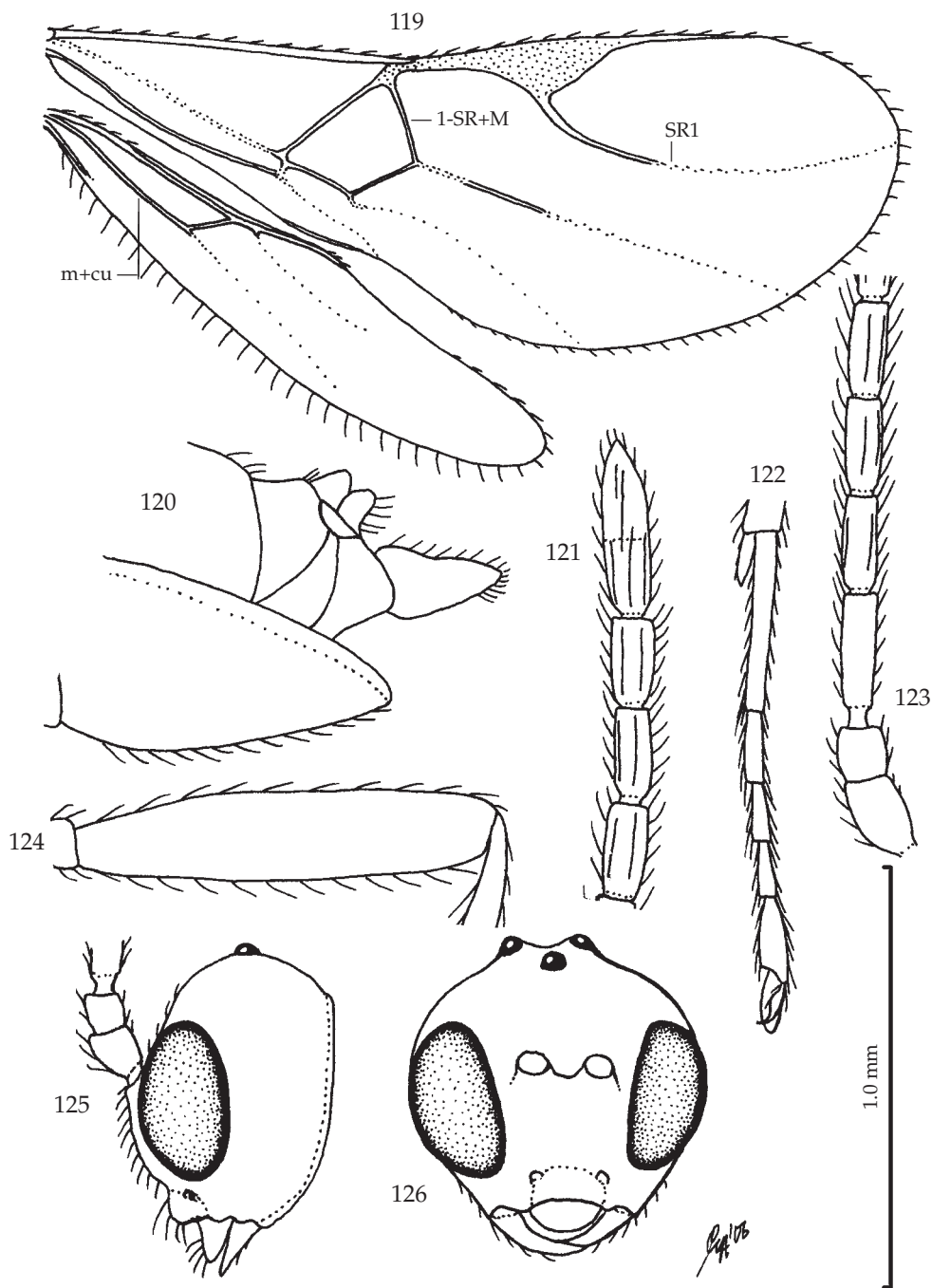
Figs. 86-91, *Cotesia hallii* (Packard), ♀, N Greenland, Thule; figs 92-96, *C. eliniae* (Papp), ♀, Greenland, Eskimonaes. 86, 94, fore wing; 87, 92, apex of antenna; 88, 95, fore femur, lateral aspect; 89, middle femur, lateral aspect; 90, 96, hind femur, lateral aspect; 91, 93, fore tarsus, lateral aspect. 86: 1.0 × scale-line; 87-91: 1.5 ×; 92, 93, 95, 96: 1.7 ×; 94: 1.1 ×.



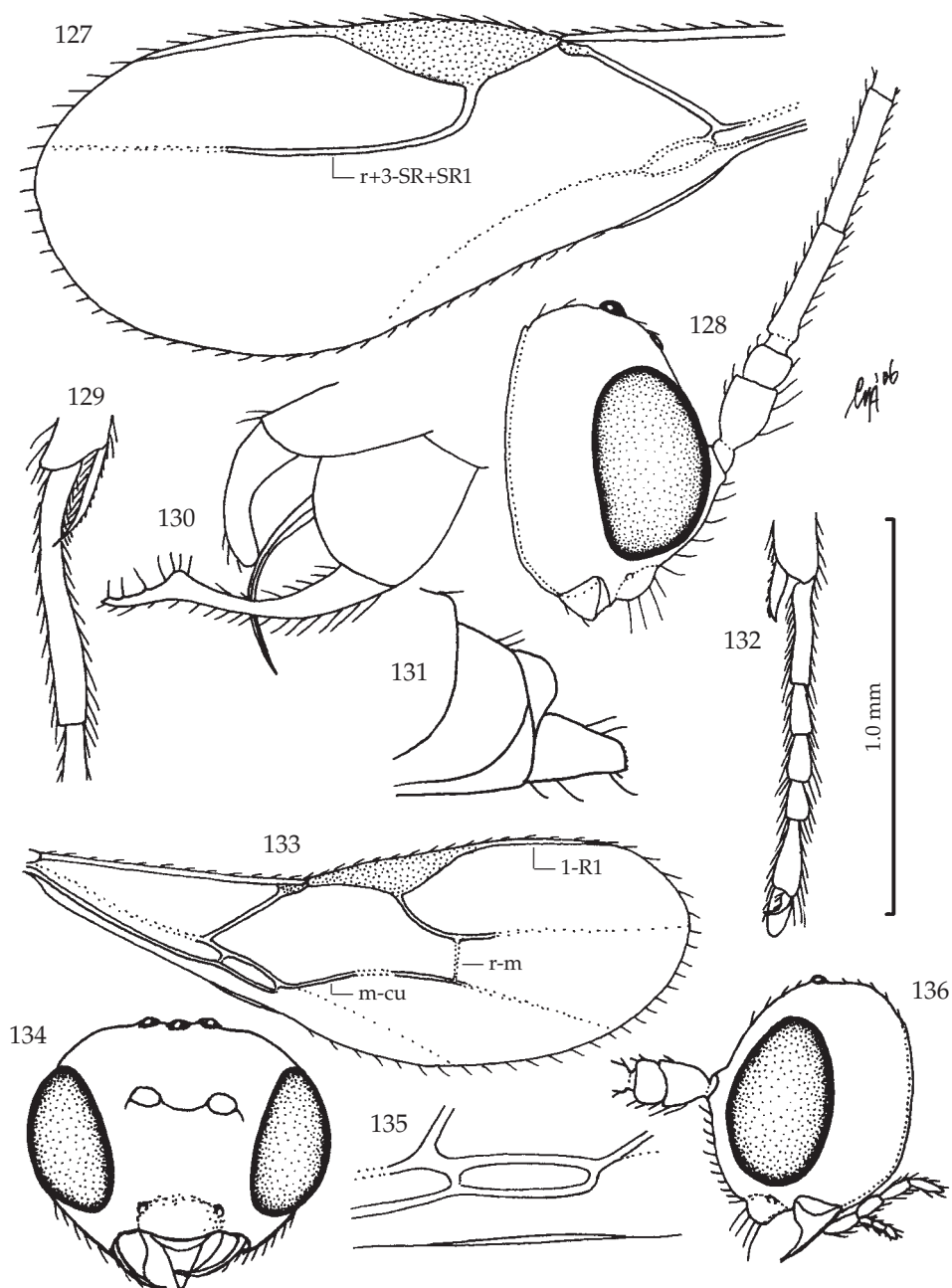
Figs. 97-102, 104, *Protapanteles immunis* (Haliday), ♀, Greenland, Skaftatell, but 101 of ♀, Netherlands, Putten; figs 103, 105, 106, *P. pallipes* (Reinhard), ♀, Netherlands, Lelystad. 97, 106, fore wing; 98, detail of vein cu-a of hind wing; 99, first metasomal tergite, lateral aspect; 100, 103, first and second metasomal tergites, dorsal aspect; 101, antenna; 102, hind leg, lateral aspect; 104, 105, fore tarsus, lateral aspect. 97: 1.0 × scale-line; 98, 99, 102: 1.1 ×; 100, 106: 1.3 ×; 101: 0.9 ×; 103: 1.5 ×; 104: 2.0 ×; 105: 2.3 ×.



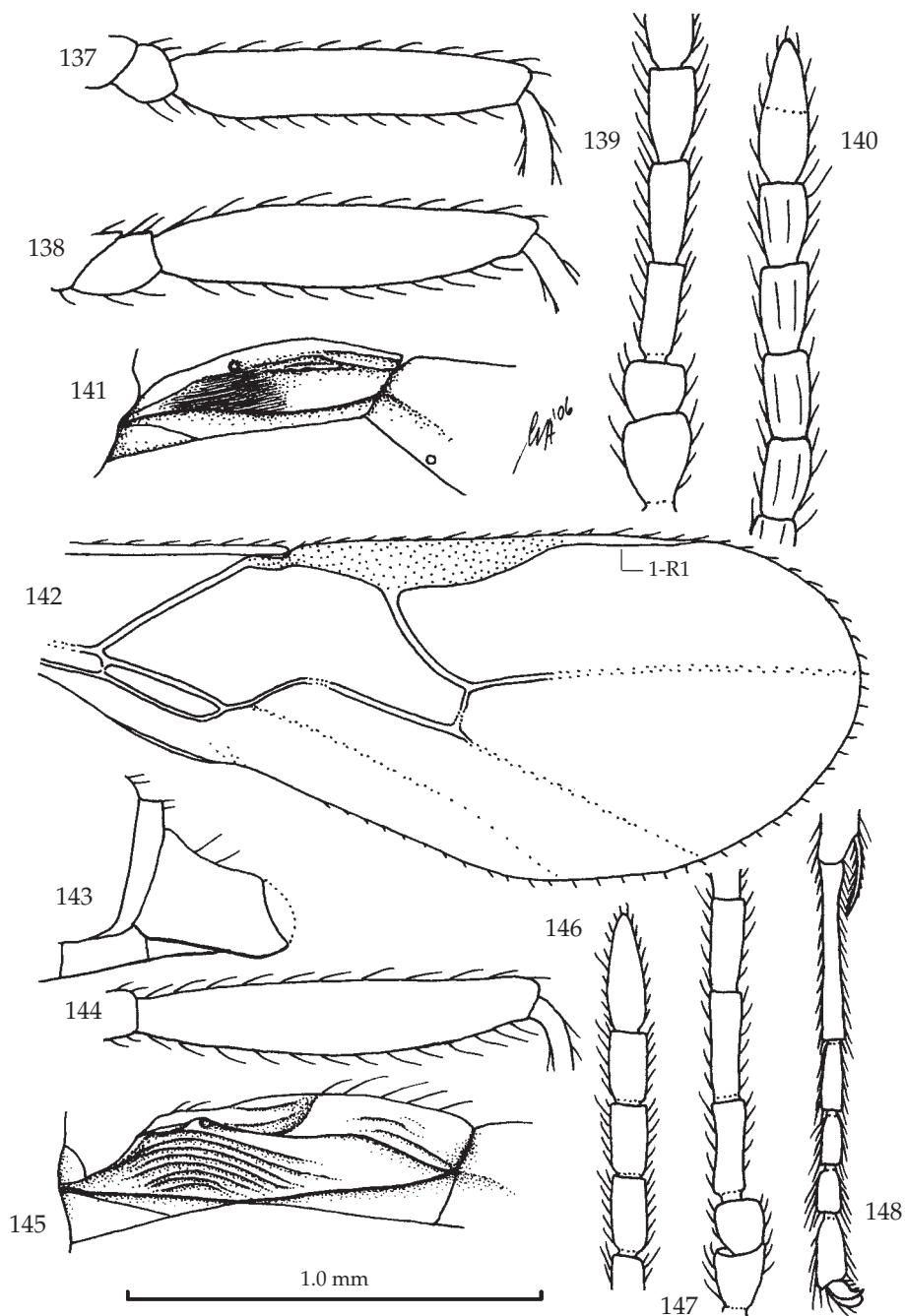
Figs. 107-111, *Protapanteles pallipes* (Reinhard) ♀, Netherlands, Lelystad; figs 112-118, *P. fulvipes* (Hali-day), ♀, W Greenland, Sondrestrom Air Base. 107, 116, first metasomal tergite, lateral aspect; 108, 112, antenna; 109, 114, hind leg, lateral aspect; 110, 118, detail of vein cu-a of hind wing; 111, ovipositor sheath, lateral aspect; 113, fore leg, lateral aspect; 115, first and second metasomal tergites, dorsal aspect; 117, fore wing. 107: 1.3 × scale-line; 108, 110, 111, 112, 115, 116, 118: 1.2 ×; 109, 117: 1.0 ×; 113: 1.6 ×; 114: 0.9 ×.



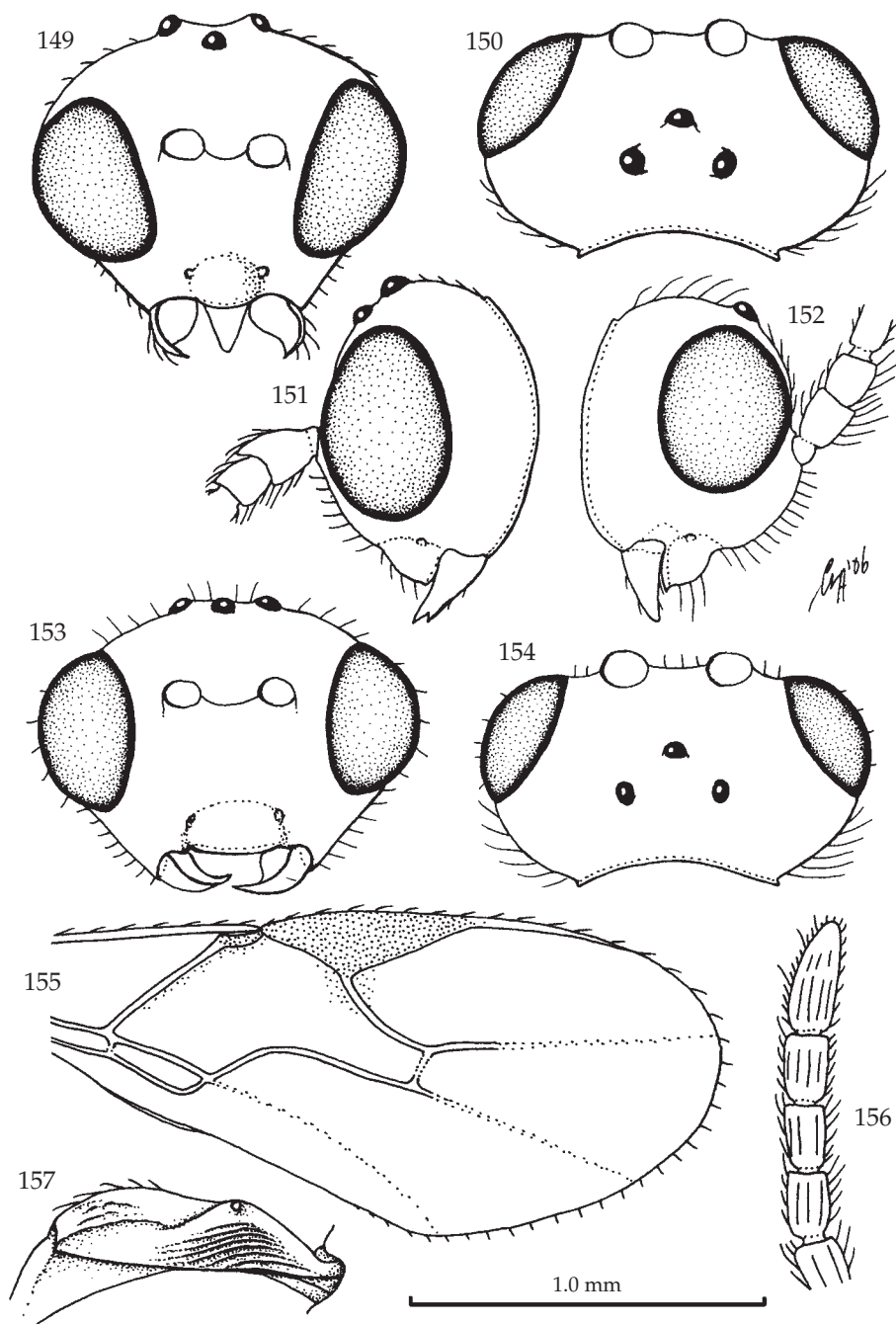
Figs. 119-126, *Praon brevistigmus* spec. nov., ♀, holotype. 119, wings; 120, ovipositor sheath, lateral aspect; 121, apex of antenna; 122, fore basitarsus, lateral aspect; 123, base of antenna; 124, hind femur, lateral aspect, 125, head, lateral aspect; 126, head, anterior aspect. 119: 1.0 × scale-line; 120-124: 2.3 ×; 125, 126: 1.7 ×.



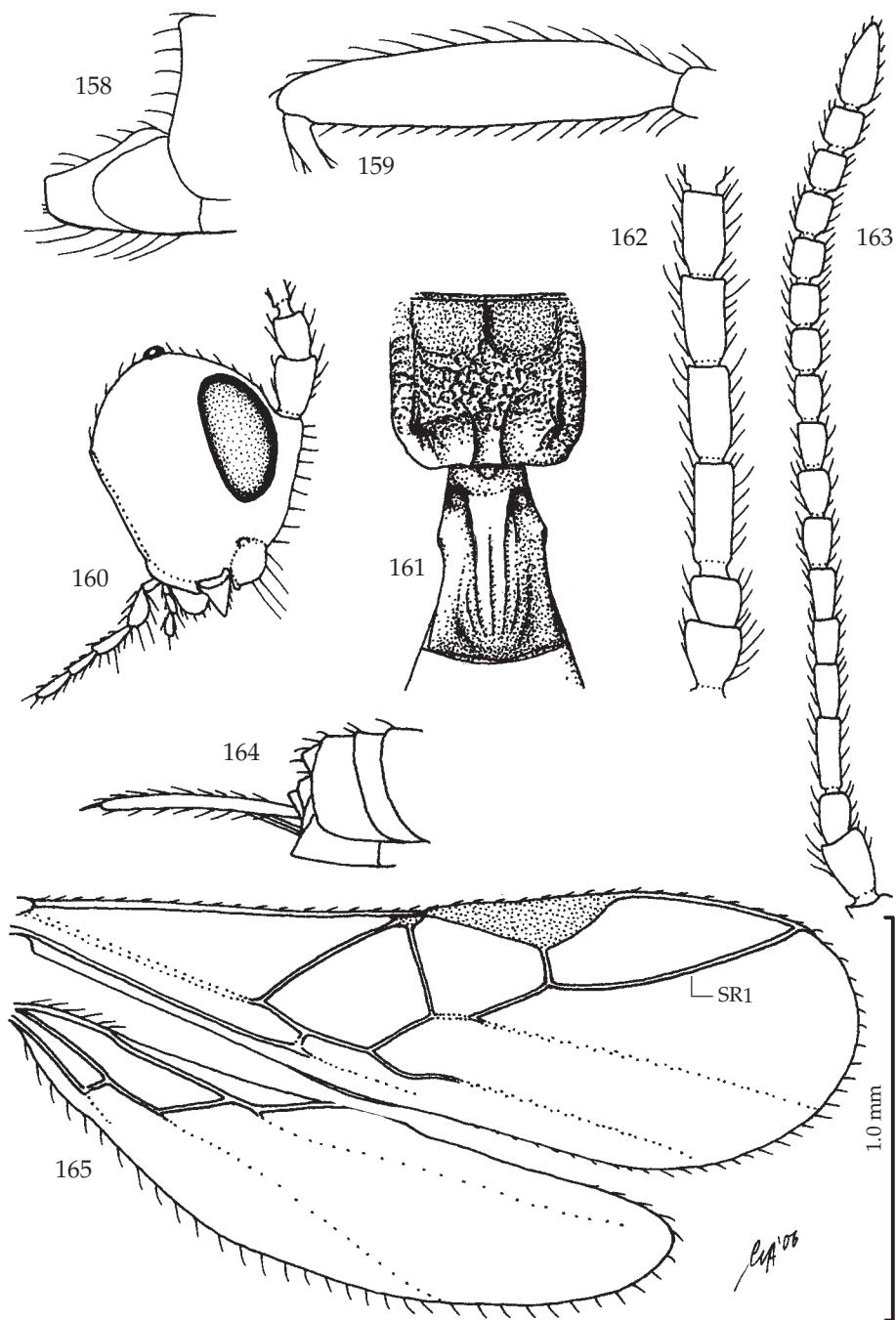
Figs. 127-130, *Trioxys compressicornis* Ruthe, ♀, S Greenland, Narsarsuaq; figs 131-136, *Aphidius tarsalis* spec. nov., ♀, holotype. 127, 133, fore wing; 128, 136, head, lateral aspect; 129, fore basitarsus, lateral aspect; 130, genitalia, lateral aspect; 131, ovipositor sheath, lateral aspect; 132, fore tarsus, lateral aspect; 134, head, anterior aspect; 135, detail of first subdiscal cell of fore wing. 127: 1.0 × scale-line; 128-130: 1.5 ×; 100, 131: 2.8 ×; 133: 1.2 ×; 134, 136: 1.9 ×; 132, 135: 2.3 ×.



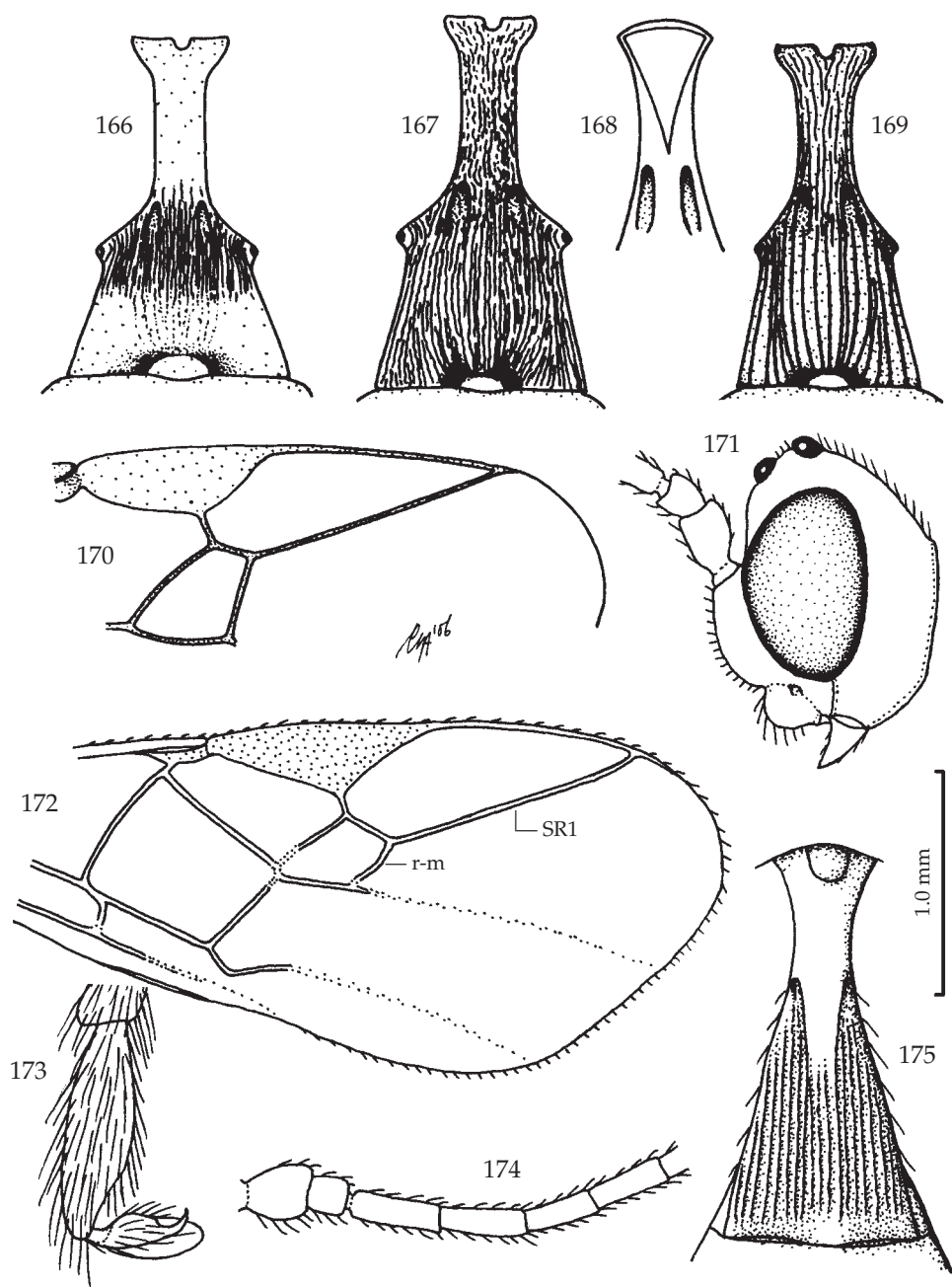
Figs 137-141, *Aphidius tarsalis* spec. nov., ♀, holotype; figs 142-148, *A. avenae* Haliday, ♀, W Greenland, Upernavik. 137, 144, fore femur, lateral aspect; 138, hind femur, lateral aspect; 139, 147, base of antenna; 140, 146, apex of antenna; 141, 145, first metasomal tergite, lateral aspect; 142, fore wing; 143, ovipositor sheath, lateral aspect; 148, fore tarsus, lateral aspect. 137-141: 1.1 × scale-line; 142: 1.0 ×; 143, 145: 2.3 ×; 144, 146-148: 1.5 ×.



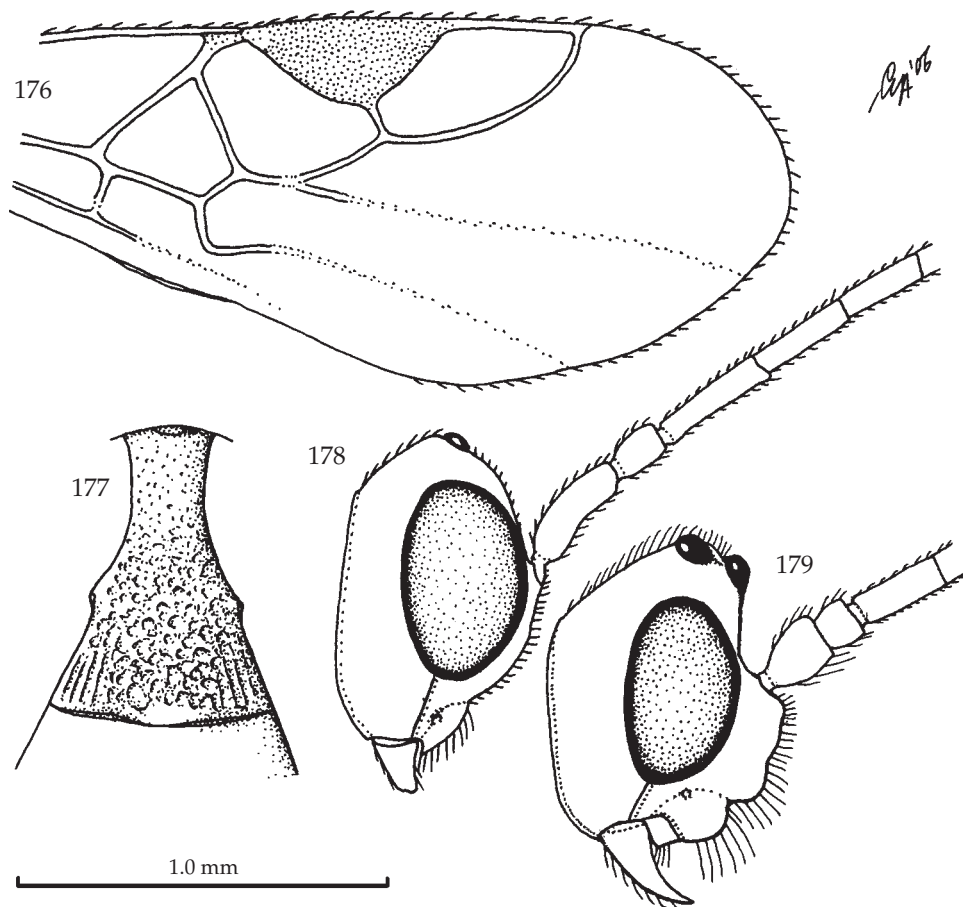
Figs 149-151, *Aphidius avenae* Haliday, ♀, W Greenland, Upernavik; figs 152-157, *A. cingulatus* (Ruthe), ♀, W Greenland, Søndre, Ivortoq. 149, 153, head, anterior aspect; 150, 154, head, dorsal aspect; 151, 152, head, lateral aspect; 155, fore wing; 156, apex of antenna; 157, first metasomal tergite, lateral aspect. 149-151, 156, 157: 1.8 × scale-line; 152-154: 1.6 ×; 155: 1.0 ×.



Figs 158, 159, 162, *Aphidius cingulatus* (Ruthe), ♀, W Greenland, Søndre, Ivortoq; figs 160, 161, 163-165, *Blacus groenlandicus* spec. nov., ♀, holotype. 158, 164, ovipositor sheath, lateral aspect; 159, hind femur, lateral aspect; 160, head, lateral aspect; 161, propodeum and first metasomal tergite, dorsal aspect; 162, base of antenna; 163, antenna; 165, wings. 158: 1.4 × scale-line; 159-163: 1.5 ×; 164, 165: 1.0 ×.



Figs 166-170, *Meteorus arcticus* Papp, after Papp (1989); figs 171-175, *M. rubens* (Nees), ♀, W Greenland, Buksefjorden. 166, 167, 169, 175, first metasomal tergite, dorsal aspect; 168, id., but ventro-basal aspect; 170, detail of pterostigma and second submarginal cell of fore wing; 171, head, lateral aspect; 172, fore wing; 173, outer hind claw; 174, base of antenna. 171, 173-175: 2.0 × scale-line; 172: 1.0 ×.



Figs 176-178, *Dinocampus coccinellae* (Schrank), ♀, Greenland, Itiveq; fig. 179, *Meteorus arcticus* Papp, ♀, Greenland, Godhavn. 176, fore wing; 177, first metasomal tergite, dorsal aspect; 178, 179, head, lateral aspect. 176: 1.0 × scale-line; 177-179: 1.2 ×.