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World revision of *Iteaphila macquarti* group (Diptera: Empididae)

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Abstract

Nineteen species are recognized in the *Iteaphila macquarti* group, including ten new species (*I. bulbosa* Sinclair **sp. nov.** (British Columbia, Canada), *I. californica* Sinclair **sp. nov.** (Baja California, Mexico), *I. chvalai* Shamshev **sp. nov.** (Kazakhstan), *I. cirrata* Shamshev **sp. nov.** (British Columbia, Canada), *I. falcata* Sinclair **sp. nov.** (British Columbia, Canada), *I. furcata* (Zetterstedt), *I. macquarti* Zetterstedt, *I. napaea* Melander, *I. nepalensis* Shamshev **sp. nov.** (Nepal), *I. nitidula* Zetterstedt, *I. orchestris* Melander, *I. pumila* Sinclair **sp. nov.** (Alaska, USA), *I. rasnitsyni* Shamshev **sp. nov.** (south Primorsk Territory, Russia), *I. saigusai* Shamshev **sp. nov.** (Nagano, Japan), *I. sicamous* Sinclair **sp. nov.** (British Columbia, Canada), *I. taiwanensis* Shamshev **sp. nov.** (Taiwan), *I. testacea* Melander, *I. triangula* (Coquillett), *I. vetula* Melander). *Iteaphila maackii* Loew is considered a *nomen dubium* due to loss of holotype. *Empis luctuosa* Kirby is considered also a *nomen dubium* and proposed as a doubtful species of *Iteaphila*. The following new synonyms are proposed: (*Empis cormus* Walker, *I. cana* Melander, *I. fuliginosa* Melander) = *I. macquarti*; (*Hilara carbonella* Zetterstedt, *Empis conjuncta* Coquillett) = *I. nitidula*. Lectotypes are designated for *I. furcata*, *I. cana*, *I. carbonella* (Zetterstedt), *I. conjuncta*, *I. orchestris*, *I. testacea* and *I. triangula*. The male of *I. testacea* is described for the first time, keys to Palearctic and Nearctic faunas are provided, and species are sorted into five monophyletic subgroups. The distributions of all species are mapped and five Holarctic species are identified (*I. cirrata*, *I. macquarti*, *I. nitidula*, *I. orchestris*, *I. pumila*). *Iteaphila* is recorded for the first time from the Oriental Region. Feeding habits for adult *Iteaphila* are summarized and reviewed, and the genus appears to be exclusively anthophilous (pollen feeding) and never predaceous.

Key words: Palaearctic, Nearctic, Holarctic (Europe, North America, Japan, Kazakhstan, Taiwan, Mongolia, Nepal, Russia), *Iteaphila*, Empididae, new species, anthophily

Introduction

The genus name *Iteaphila* (Latin *itea* = willow) was coined by Zetterstedt (1838) in recognition of the common occurrence of these flies on willows (*Salix*). In fact, *Iteaphila* is often collected in long series on spring flowers (Fig. 1), based on personal observations, label data and the published observations and review of Tuomikoski (1952) (see Feeding habits).

Iteaphila is currently a member of the *Iteaphila* genus-group, unassigned to family within the Empidoidea (Sinclair & Cumming 2006; Shamshev & Sinclair 2009). The genus group also includes *Anthepiscopus* Becker. An undescribed Australian genus ("new genus 2") was originally assigned to this genus group (Sinclair & Cumming 2000) on the basis of flower visiting habits, obliquely projecting proboscis and long straight palpi. The presence of epipharyngeal blades in this undescribed genus casts doubt about its affinities and the phylogenetic assignment requires reanalysis.

This is the second in a series of papers revising the world species of *Iteaphila* and its sister genus, *Anthepiscopus*. The first study revised the six species of the *Iteaphila setosa* group (Shamshev & Sinclair 2009). This species group is very distinct and clearly monophyletic defined by the long stylus nearly half length of pedicel, 2–3 pairs of scutellar setae, and presence of the long, slender epandrial lobe. The remaining species of *Iteaphila* are assigned to the *I. macquarti* group, which is likely paraphyletic in relation to *Anthepiscopus*, but final evaluation of this classification and the validity of recognizing two separate genera must await revision of the world species of *Anthepiscopus*, the third study planned for this series.

The Palearctic species of *Iteaphila* were initially reviewed by Engel (1941), but the types were not examined and species identification was confused. Tuomikoski (1958) reviewed the northern European species, including assessing the status of Holarctic species. The North American species were revised initially by Melander (1946) and later updated in an unpublished thesis by Anderson (1973). The present study has re-examined the specimens studied by Anderson (1973), augmented by many more recently collected specimens. *Iteaphila* proved a challenging taxon to revise due to variation in body colouration, thoracic chaetotaxy and proboscis length (Figs. 2, 3). This was compounded by the occurrence of sympatric species, often occurring together on flowering plants.

Adult *Iteaphila* have short flight periods occurring in early spring. In southern Ontario (Canada) adults usually first appear in late April to the first week of May, whereas collection records indicate adults are active in July in the Rockies and late May to June in the mountains of California and Oregon. In central Europe, species appear to be most common from mid-May to mid-June and extending into July in Scandinavia.

In this study, all world species of the *I. macquarti* group are revised, male terminalia illustrated, distributions mapped and separate keys to the Palearctic and Nearctic regions provided. The feeding habits and flower species visited by the *I. macquarti* group are briefly discussed and listed, respectively.

Material & methods

This study is based on material borrowed from or deposited in the following institutions: American Museum of Natural History, New York, USA (AMNH); Academy of Natural Sciences of Philadelphia, Philadelphia, USA (ANSP); M. Barták collection [private], Prague, Czech Republic (BARC); California Academy of Sciences, San Francisco, USA (CAS); M. Chvála collection [private], Prague, Czech Republic (CHVC); Canadian National Collection of Insects, Ottawa, Canada (CNC); Cornell University Insect Collection, Ithaca, USA (CUIC); University of Guelph Insect Collection, Guelph, Canada (DEBU); Field Museum of Natural History, Chicago, USA (FMNH); Kyushu University Museum, Fukuoka, Japan (KUMF); Lyman Entomological Museum, McGill University, Ste-Anne-de-Bellevue, Canada (LEM); Muséum d'Histoire Naturelle, Geneva, Switzerland (MHNG); Montana Entomology Collection, Bozeman, USA (MTEC); Museum of Zoology, Lund University, Lund, Sweden (MZLU); Naturhistoriska Riksmuseet, Stockholm, Sweden (NHRS); Oberösterreichisches Landes Museum, Linz, Austria (OLML); Royal British Columbia Museum, Victoria, Canada (RBCM); Royal Ontario Museum, Toronto, Canada (ROM); University of Alaska Museum, Fairbanks, USA (UAM); Spencer Entomological Museum, University of British Columbia, Vancouver, Canada (UBCZ); United States National Museum of Natural History, Washington D.C., USA (USNM); Washington State University, Pullman, USA (WSU); Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany (ZFMK); Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZIN); Zoological Museum of Moscow State University, Moscow, Russia (ZMMU); Zoological Museum, University of Helsinki, Helsinki, Finland (ZMH); Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany (ZMHB); Zoological Museum, University of Copenhagen, Copenhagen, Denmark (ZMUC).

The following abbreviations for the most frequent collectors are used in the material examined sections: AB—A. Borkent; ALM—A.L. Melander; BEC—B.E. Cooper; BHP—B.H. Poole; BJS—B.J. Sinclair; CHM—C.E. Mann; CSG—C.S. Guppy; DDW—D.D. Wilder; DMW—D.M. Wood; GES—G.E. Shewell; GJS—GJS; JGC—J.G. Chillcott; JFM—J.F. MacDonald; JRV—J.R. Vockeroth; MB—M. Barták; PHA—P.H. Arnaud; PJS—P.J. Skitsko; REL—R.E. Leech; SAM—S.A. Marshall; TS—T. Saigusa; WWM—W.W. Moss. The following abbreviations are used in the “Type material” and “material examined” sections: Ck, creek; Cpgd, campground; Lk, lake; mi., mile(s); MT, Malaise trap; NP, National Park; PP, Provincial Park, R, river; SP, State Park; YPT, yellow pan trap. The following abbreviations are used in the descriptions for the scutal setae: acr—acrostichal setae, dc—dorsocentral setae, presut spal—presutural supra-alar setae, npl—notopleural setae, psut spal—postsutural supra-alar setae, pal—postalar setae, sctI—scutellar setae.

Terms used for adult structures primarily follow those of Cumming and Wood (2009), except for the antenna and wing venation where the terms of Stuckenberg (1999) and Saigusa (2006) are used respectively. In the system outlined by Saigusa (2006), the dipteran wing vein A_1 (as used in McAlpine 1981) is homologized with the mecopteran CuP, and consequently CuA_1 (of McAlpine) is termed M_1 , whereas CuA_2 is CuA, the anal cell is cell cua and the anal vein (A_1+CuA_2) is CuP+CuA.

Label data for primary types are cited from the top downward, with the data from each label in quotation marks. Labels are cited in full, with original spelling, punctuation, and date, and label lines are delimited by a slash (/). Additional information is included in square [] brackets. The repository of each type is given in parentheses. Secondary type data are abridged and listed alphabetically.

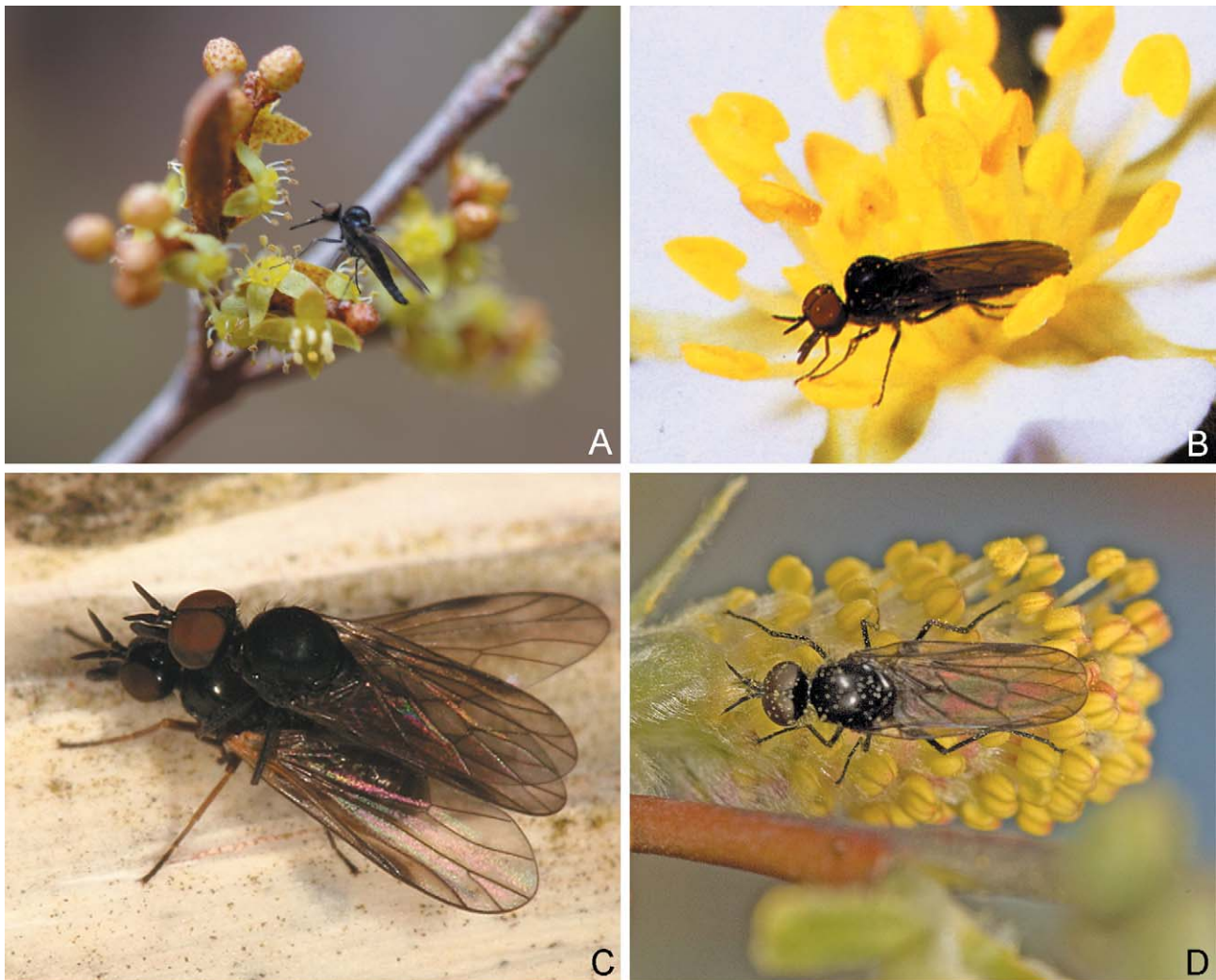


FIGURE 1. Species of *Iteaphila* on flowers. **A.** *I. macquarti*, male on *Shephardia* sp. (photo: A. Borkent); **B.** *Iteaphila* sp., male on *Fragaria virginiana* (photo: S. Marshall); **C.** *I. nitidula*, in copula (photo: T. Murray); **D.** *Iteaphila* sp., male on willow (photo: S. Marshall).

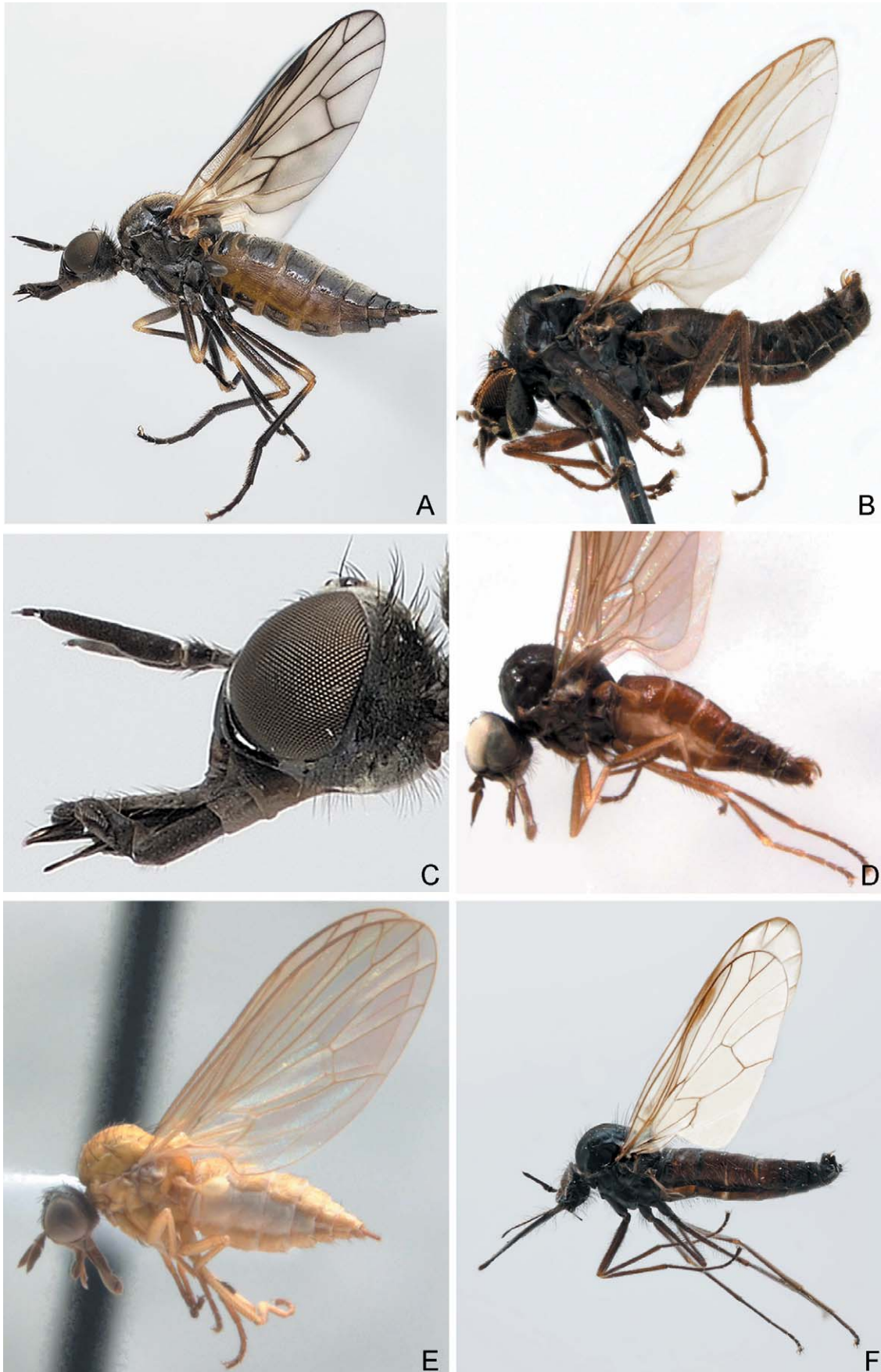


FIGURE 2. Species of *Iteaphila*. **A.** *I. macquarti*, female (photo: T. Thomas); **B.** *I. pumila*, male; **C.** *I. macquarti*, female, head (photo: T. Thomas); **D.** *I. testacea*, male; **E.** *I. testacea*, female; **F.** *I. chvalai*, male.

Genus *Iteaphila* Zetterstedt

(Figs. 1–3)

Iteaphila Zetterstedt, 1837: 31, *nomen nudum*.

Iteaphila Zetterstedt, 1838: 540. Type species: *Iteaphila macquarti* Zetterstedt, 1838, des. Coquillett, 1903: 251.

Steleocheta Becker, 1887: 129. Type species: *Steleocheta setacea* Becker, 1887 (by monotypy) (= *Iteaphila macquarti* Zetterstedt, 1838).

Stelochaeta or *Steleochaeta*, errors: Chvála & Wagner, 1989: 230.

Diagnosis. This genus typically has long antennae, conspicuously lengthened proboscis and palpi (which are usually directed forward and subequal in length), palpi run parallel to proboscis (Fig. 2C), slender legs, humped thorax clothed in numerous unmodified hair-like setae, R_{4+5} branched, and discal cell usually truncate apically (Fig. 2A) (except *I. setosa* group).

Remarks. *Iteaphila* and *Anthepiscopus* are readily recognized from other Empidoidea by the characters listed in the above Diagnosis, except R_{4+5} is unbranched in the latter genus. The presence or absence of the radial fork is the only feature that distinguishes these two genera. If the wing tip is damaged, determining the identity of the genus is not possible if the abdomen is missing or is a female specimen (other than species of the *I. setosa* group). Not surprisingly, the occasional specimen of *Iteaphila* has been found lacking the radial fork (identification based on male terminalia), but this is likely an aberration. The presence or absence of the radial fork in defining genera has been found problematic in recognizing monophyletic groups within *Empis* L. and *Rhamphomyia* Meigen (e.g., see discussion in Chvála 1994). As stated in the introduction, the *I. macquarti* group is likely paraphyletic in relation to *Anthepiscopus*, but we consider it more important at this time to establish the identity of all species of *Iteaphila* before attempting to resolve this problem. A significant step forward is the establishment of monophyletic groups within the *I. macquarti* group which are listed at the end of this paper, defined primarily on the basis of apomorphies of the male terminalia.



FIGURE 3. Species of *Iteaphila*. A. *I. macquarti*, male; B. *I. nitidula*, male.

Iteaphila bulbosa Sinclair sp. nov.

(Figs. 4B, 5A)

Type material. HOLOTYPE, ♂ labelled: “[CANADA] Atlin B.C. 2200/ 7.vi.1955/ H. Huckel”; HOLOTYPE/*Iteaphila/ bulbosa/ Sinclair* [red label]” (CNC). PARATYPES: CANADA. Alberta: Edmonton, University of Alberta Ecol. Res., 13–22.v.1986, MT, spruce/aspens, B.V. Brown (1 ♀, CNC); Eisenhower Junction [= Castle

Junction], 4700', Banff NP, 11.vii.1955, GES (2 ♀, CNC, USNM); Kananaskis, For. Exp. Sta. Seebe, 5–15.vi.1968, H.J. Teskey (2 ♀, CNC); Ptarmigan Trail, 6500', 20.vii.1928, O. Bryant (2 ♀, CAS). **British Columbia:** Alaska Hwy, Buckinghorse R PP, 279 kmN Dawson Creek, 6.vi.1996, PHA (1 ♀, USNM); Atlin, 2200', 3–29.vi.1955, B.A. Gibbard, H. Huckel (3 ♂, 8 ♀, CNC); King Salmon Lk, 58°43' 132°54', 1750', 14.vii.1960, R. Pilfrey (1 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 2, 2–9.vi.2000, MT, G. Gareau (1 ♂, 4 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 1, MT, 25.vi.–9.vii.2000, G. Gareau (5 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Control 1-2, MT, 17.vi.–2.vii., 2–16.vii.2000, G. Gareau (3 ♀, CNC); Salmon Arm, 31.iii., 1.iv.1992, AB (2 ♀, CNC); Summit Lk, mi 392 Alaska Hwy, 4500–5300', 15–27.vi.1959, REL (3 ♂, CNC, USNM). **Yukon:** Dempster Jct, 40 kmE Dawson, FIT, 19.vi.–25.viii.1984, S. & J. Peck (2 ♀, CNC); Klondike Loop, J 390 km, McQuesten, 14.vi.1996, PHA (1 ♀, USNM); North Fork Crossing, mi 42–43, Peel Plateau Rd, 3500', 24.vi.–4.vii.1962, PJS (4 ♀, CNC); Swim Lakes, 133° 62' 13', 3200', 8.vi.1960, J.E.H. Martin (1 ♀, CNC). **USA. Alaska:** Chitina, 2.vi.1953, W.C.F. (1 ♀, WSU); Nome Area, mi 17 Kougarak Rd, MT, 64°42'22"N 165°17'50"W, 20–26.vi.2005, J. & R. Skevington (5 ♀, CNC); Nome Area, mi 55 Kougarak Rd, MT, 65°05'23"N 164°40'20"W, 24–26.vi.2005, J. & R. Skevington (1 ♀, CNC); Taylor Hwy, Walker Fork Cpgd, 17.vi.1996, PHA & M.M. Arnaud (1 ♀, USNM).

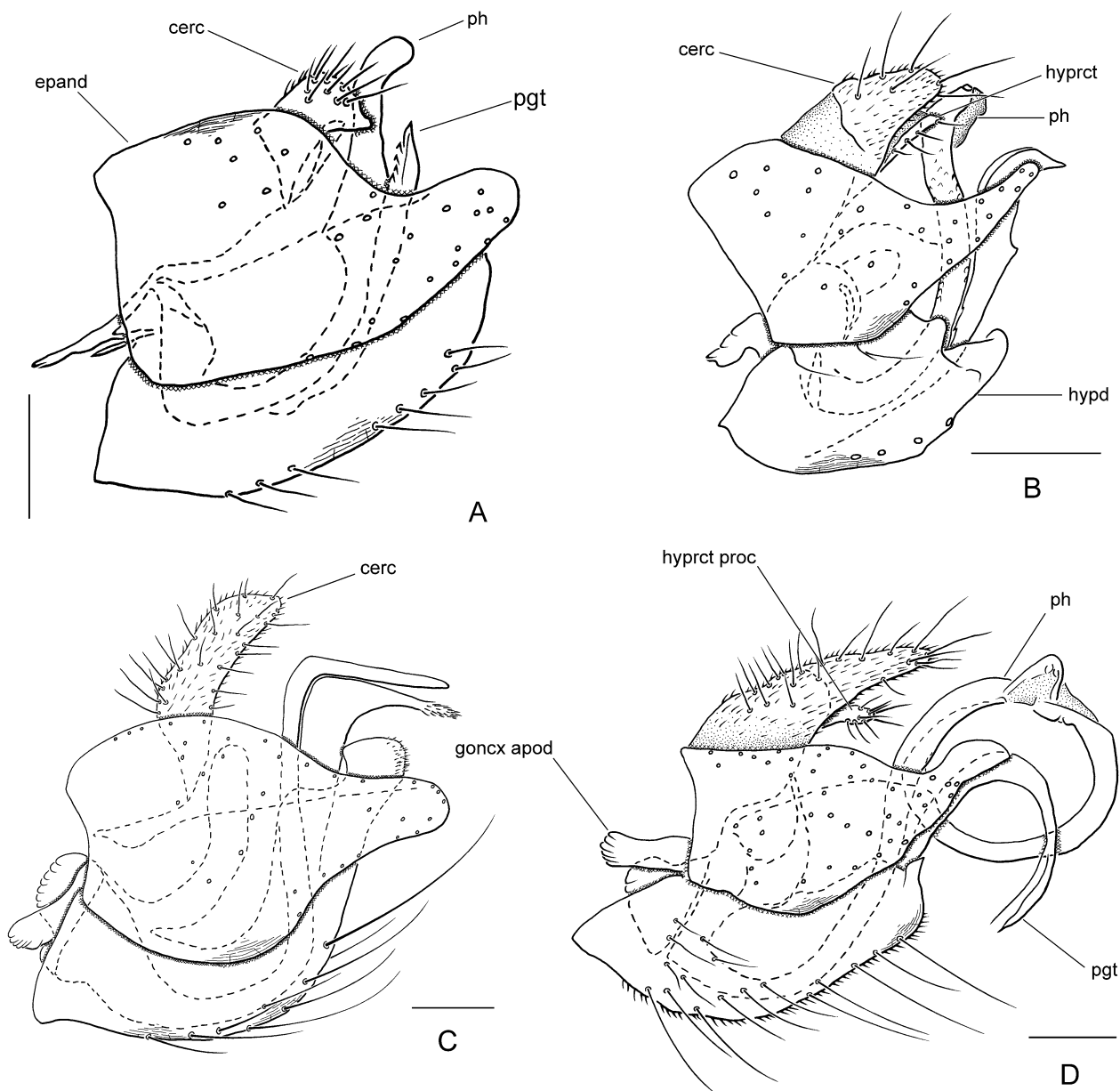


FIGURE 4. Male terminalia of *Iteaphila*, lateral view. **A.** *I. bulbosa* sp. nov.; **B.** *I. californica* sp. nov.; **C.** *I. chvalai* sp. nov.; **D.** *I. cirrata* sp. nov. Abbreviations: cerc—cercus; epand—epandrium; goncx apod—gonocoxal apodeme; hypd—hypandrium; hyprct—hypoproct; hyprct proc—hypoproct process; pgt—postgonite; ph—phallus. Scale bar = 0.1 mm.

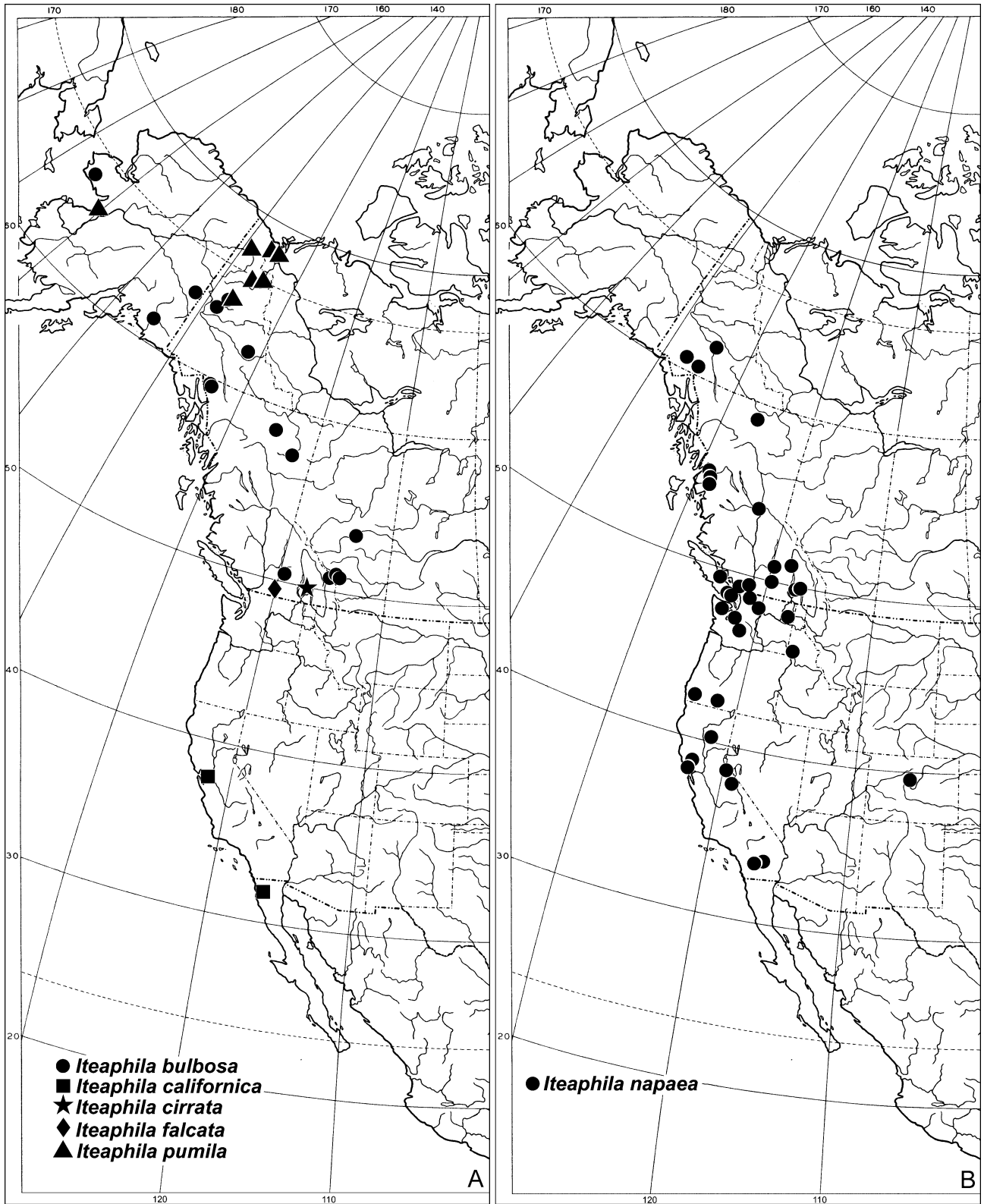


FIGURE 5. Distribution of species of *Iteaphila* in North America. **A.** *I. bulbosa* sp. nov., *I. californica* sp. nov., *I. cirrata* sp. nov., *I. falcata* sp. nov., *I. pumila* sp. nov.; **B.** *I. napaea*.

Recognition. This species is distinguished by its short proboscis and dense grey pollinosity in females and quadrate epandrium with narrow apical third and broad epandrial bridge, short cerci and short hypandrial setae in males.

Description. Wing length 4–4.7 mm. **Male.** Head subtriangular, brown, with brown setation; occiput greyish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, greyish pollinose. Ocellar triangle very prominent, bearing moderately long proclinate setae. Postvertical and postocular setae moderately long, thin; occiput covered with numerous similar setae longer on lower half. Antenna brown; scape elongate, postpedicel nearly 3 times longer than basal width, smoothly tapered; stylus shorter than basal width of postpedicel. Proboscis short, rarely projected beyond head capsule; labium less than half as long as head is high; palpus projected parallel to labrum, slightly longer than labrum.

Thorax brown with thick and long greyish pollinosity; setation brown to black; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally dull brown, with pubescent vittae along inner edge of dorsocentral row; viewed anteriorly velvety golden-brown. Proepisternum with few brownish setae. Postpronotal lobe with pale apical patch with 1–2 (usually 1) long setae and 2–3 long pale setulae. Mesonotal setae not prominent; acr short, biserial, sometimes with additional setulae on anterior part, lacking on prescutellar depression; dc uniserial throughout, slightly longer than acr, 3 prescutellar dc pairs longer, darker and stouter; many more or less prominent presut spal (often with additional setulae); 3 npl with additional thinner setae of different lengths along ventral ridge; 2–3 psut spal; 1 long pal; 7–8 pairs of sctl arranged in row.

Legs wholly brownish. Coxae and trochanters with numerous long pale setae. Fore and mid femora with short to moderately long numerous bristly setae on posteroventral (stronger on mid femur at least apically and longer than width of femur), posterior and dorsal faces. Hind femur with similar somewhat longer anteroventral and dorsal bristly setae. Tibiae lacking prominent setae, with some longer dorsal and ventral setulae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly infusate, with brown veins; no bristle at wing base; stigma distinctly brownish, elliptical, overlapping apex of R_1 ; anal lobe very prominent, acute. Sc complete; R_{2+3} straight in apical part; radial fork with base proximal to apex of R_{2+3} ; R_5 and M_1 divergent before wing-apex; cell d broad and truncate or slightly produced apically, longer than basal cells; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly concave; M_4 somewhat shorter than dm-cu crossvein. Apex of cell cua recurved, slightly round, CuP+CuA long, ending just short of wing margin. Halter brown.

Abdomen with tergites viewed dorsally and laterally dull brownish (often rather subshining) but viewed posteriorly velvety brown; with numerous long pale setae, somewhat darkly on posterior segments; setae of basal segments longer than width of segment. Terminalia concolorous with abdomen, small, stout and somewhat rounded. Hypandrium rounded and broad apically; gonocoxal apodeme long and slender (Fig. 4A). Postgonite posterior to phallus, extended slightly beyond epandrium at apex of hypandrium; closely approximated, anterior face with toothed margin and pointed apically. Epandrium not greatly inflated laterally; dorsal bridge broad, nearly half length of lamella; produced distally into broad lobe. Surstylus not distinguished. Phallus extended slightly beyond cercus, arched subapically with rounded apex; ejaculatory apodeme slender, shorter than gonocoxal apodeme; base of phallus lacking lobe. Cercus short, rounded posterodorsally, only slightly extended beyond epandrium; posteroventral corner produced, triangular; hypoproct not produced into lobe.

Female. Dichoptic, with equally small ommatidia. Frons very broad, divergent toward ocellar tubercle, clothed in pruinescence, bearing short marginal setulae. Occiput with somewhat stronger postvertical and postocular setae and shorter bristly setae on lower part. Scutum viewed dorsally thickly greyish pollinose, with 3 prominent brown vittae along acrostichal and dorsocentral bristles (sometimes in this view scutum appearing wholly greyish brown), viewed anteriorly silver grey pollinose; presutural supra-alar and notopleural faces pollinose; katapisternum and anepisternum completely clothed in greyish pollinose. Scutellum with 7–8 pairs of brown setae. Legs varying in colour but always paler in than male; apical third, knees and extreme base of fore and mid tibiae yellowish; coxae pale to greyish pollinose; setae short and pale. Wing finely brownish infusate veins, somewhat darker than male. Abdomen brownish, viewed dorsally pollinose, with short pale setae. Cercus elongate, concolorous with abdomen.

Etymology. This species is named in reference to the laterally expanded epandrium.

Distribution. This species is found in northwestern North America, ranging from Alaska to southern British Columbia and Alberta (Fig. 5A).

***Iteaphila californica* Sinclair sp. nov.**

(Figs. 4B, 5A)

Type material. HOLOTYPE, ♂ labelled: “5 miles E. of/ S. Tomas, L.C. [MEXICO]”; “at flrs of/ Prunus”; “Timberlake/ col, Feb 21, [19]46”; “HOLOTYPE/ *Iteaphila/ californica/ Sinclair* [red label]” (CAS).

PARATYPES: MEXICO. Baja California: Same data as holotype (3 ♂, CAS). USA. California: Mt. Diablo [Contra Costa Co.], Manzanita flowers, 22.ii.1937, R.L. Usinger (1 ♂, CAS).

Recognition. This species is distinguished by its long and slender body with very small male terminalia bearing long and stout hypandrial setae, absence of the hypoproct process and strongly tapered and slender epandrium.

Description. Wing length 2.6–3.0 mm. **Male.** Head subcircular, black, with black setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with pair of long, stout, proclinate anterior ocellar setae; posterior ocellar pair half length of anterior pair. Postvertical and postocular setae rather long, thin, hair-like; occiput covered with numerous similar setae. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 3 times longer than basal width, strongly tapered; stylus shorter than basal width of postpedicel, bristle-tipped, length of segment 9 about twice width, apical bristle less than half length of segment 9. Proboscis short, less than half head height, projected obliquely; labium less than half head height; palpus projected parallel to labrum, slightly shorter than length of labrum.

Thorax dark brown, with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, slightly matt, lacking vittae. Proepisternum bare. Postpronotal lobe with several long, fine setae and 1 prominent seta. Mesonotal setae prominent, 2–3 npl, 2 presutal, nearly as long as sctl, 1 pal, 5–8 pairs of sctl in single row; acr biserial, long, separated by slightly shorter than length of setulae ending at prescutellar depression; dc slightly longer than acr, uniserial, with prominent prescutellar dc.

Legs dark brown (knees not paler). Coxae and trochanters with several long, fine setae. Fore and mid femora with rows of long, numerous hair-like setae on anteroventral, posteroventral, posterior faces. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Hind tibia with prominent row of dorsal setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R₁; anal lobe very prominent, acute. R₂₊₃ straight beneath stigma; radial fork with base proximal to apex of R₂₊₃; R₅ and M₁ parallel at wing-apex; cell d broad, longer than basal cells, slightly produced apically, truncate; m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M₄ longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, faint, ending short of wing margin. Halter light brown.

Abdomen narrowed proximad, covered with numerous, long, pale hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally finely greyish brown pollinose, viewed posteriorly densely greyish brown pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, curved apically with rounded and broadly notched apex, bearing several long, stout setae nearly as long as sclerite; gonocoxal apodeme short and slender (Fig. 4B). Postgonite posterior to phallus, extended beyond epandrium, parallel with phallus and hooked apically; posterior margin of shaft with projection at mid-length; apex sharply pointed. Epandrium not greatly inflated laterally; dorsal bridge very broad; produced distally and sharply tapered into slender surstylus; apex of surstylus sharply pointed and slightly arched medially; inner margin of epandrium plate-like, expanded medially. Phallus long and slender, arched slightly beyond cercus, apex roundly curved; apex rounded, membranous posteriorly; ejaculatory apodeme small and slender; base of phallus with posteriorly produced, single, rounded membranous lobe. Cercus tapered, shorter than epandrium, thumb-like and broad basally, apex rounded, extended well free from epandrium; hypoproct plate-like, well developed and expanded beyond cercus margin, not projecting as paired lobes.

Female. Unknown.

Etymology. The species is named after its presently-known restricted distribution.

Distribution. This species is currently relatively rare, known only from two localities in California and Baja California (Mexico) (Fig. 5A).

***Iteaphila chvalai* Shamshev sp. nov.**

(Figs. 2F, 4C, 12A)

Type material. **HOLOTYPE**, ♂ labelled: “[printed in Cyrillic] [KAZAKHSTAN] dol. r. B. Almaatinka [valley of Bol'shaya Almaatinka River]/ okr. Alma-Ata [env. Alma-Ata], 2500 m/ Gorodkov 26.vii.969”; “redkiy el'nik iz Picea/ schrenkiana/ Almaatinskoe oz. [sparse fir-grove of *Picea schrenkiana*, Almaatinskoe Lake]”; “HOLOTYPE/ *Iteaphila/ chvalai/ Shamshev* [red label]” (ZIN). **PARATYPES:** **KAZAKHSTAN**, Tien-shan, Alma-Arasan r., Zailijskij Alatau 2500 m, 30.v.1980, M. Chvála (6 ♀, CHVC).

Recognition. This species is distinguished by the pale halteres in females and uniserial dorsocentral setae, absence of the hypoproct process and subrectangular male cercus.

Description. Wing length 4.4 mm. Head black, with black setation, occiput finely greyish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, greyish pollinose. Ocellar triangle very prominent, with 2 pairs fine proclinate setae, posterior pair somewhat longer. Postvertical and postocular setae moderately long, thin; occiput covered with numerous similar setae longer on lower half. Antenna brown; scape elongate, pedicel globular, both with several short setae; postpedicel long, nearly 4.0 times longer than wide (4.6 times in holotype), rather narrow at base, smoothly tapered; stylus very short, bristle-tipped. Proboscis long, projected obliquely (Fig. 2F); labium nearly 2.0 times as long as head height; palpus projected parallel to labrum, somewhat shorter than labrum, with numerous long bristly hairs.

Thorax black in ground-colour, mostly with black setation (except proepisternum). Scutum viewed dorsally dark brown, rather subshining, viewed anteriorly appearing denser brown pollinose, without prominent vittae; mesopleuron uniformly finely greyish pollinose. Proepisternum with few short brownish bristly hairs. Postpronotal lobe with 1 moderately long and several shorter setae. Mesonotum with thin setae; acr setae short, arranged in 2 close rows, lacking on prescutellar depression; dc uniserial, mostly nearly as long as acr, 2–3 prescutellar pairs longer; several setae of different lengths present on presut and psut spal faces, 3–4 npl (with several additional shorter setae), 1 long pal, 8 pairs of sclt.

Legs, including coxae, brownish. Coxae and trochanters with ordinary bristly hairs. Fore and mid femora with numerous hair-like anteroventral, longer posteroventral, posterior and posterodorsal setae; additionally, mid femur with similar short setae anteriorly. Hind femur with long (longer than femur is deep) anteroventral, anterodorsal and dorsal bristly hairs and with similar but shorter posteroventral setae. Tibiae lacking prominent setae; mid tibia with circler of subapical spinules. Tarsomere 5 on all legs flattened; pulvilli broad, shorter than tarsal claw.

Wing finely brownish infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly deflected below stigma; radial fork V-shaped, rather long, with base proximal to apex of R_{2+3} ; R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight; vein M_4 somewhat longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter brown.

Abdomen with tergites brownish, subshining, finely greyish pollinose, covered with numerous black hair-like setae longer on tergites laterally. Terminalia small, brown, except phallus yellow, with black setation. Hypandrium robustly rounded, upcurved apically with broadly rounded apex and subapical expansion; clothed in long setae; gonocoxal apodeme long and slender (Fig. 4C). Postgonite posterior to phallus, extended posteriorly beyond epandrium, parallel with phallus and strongly bent nearly at right angles subapically; bent apical section straight, long and slender with microtrichia apically. Epandrium not greatly inflated laterally; dorsal bridge narrow; anterior portion subquadrate and very broad, posterior third greatly narrowed compared to anterior portion; inner face of apex of surstylus unmodified. Phallus long and robust, arched beyond epandrium posteriorly, strongly bent subapically; apical section slender and straight; apex rounded; ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme. Base of phallus produced posteriorly into long and parallel-sided lobe with rounded apex. Cercus subrectangular, elongate, more than one-third length of epandrium; thumb-like with apex truncate, mostly straight; hypoproct not produced into paired lobes.

Female. Wing length 4.0–4.1 mm. Dichoptic, with equally small ommatidia. Frons very broad, slightly widened toward ocellar tubercle, uniformly greyish pollinose, with marginal setulae. Ocellar triangle with 2 pairs of equally short setae. Occiput with rather short setae in upper part and numerous short hair-like setae in lower part. Thorax with scutum viewed dorsally rather subshining, entirely finely greyish pollinose, with 3 indistinct brownish

vittae down acr and dc setae. Mesonotum with shorter setae on presut and psut spal faces, 6–7 pairs of sctl. Legs, including coxae, largely yellow to tawny yellow; all femora dorsally, tibiae at apex and tarsi brownish. Fore and mid femora clothed with similar short setae. Hind femur with moderately long (somewhat shorter than femur is deep) anteroventral and anterodorsal and with longer, mainly erect, dorsal bristly hairs. Halter yellow. Abdomen covered with scattered, short, brown bristly hairs; tergite 8 brown. Sternites brownish yellow, finely greyish pollinose, covered with scattered setulae; sternite 8 brown. Cercus elongate, slender, brown, covered with dark setulae.

Etymology. The species is named after the collector of the female paratypes and in recognition of Dr. Chvála's dedication to Empidoid research.

Remarks. Like *I. nepalensis* sp. nov., this species is sexually dimorphic in halter colour.

Distribution. This species is currently relatively rare, known only from two localities in Kazakhstan (Fig. 12A).

***Iteaphila cirrata* Shamshev sp. nov.**

(Figs. 4D, 5A, 12A)

Type material. **HOLOTYPE**, ♂ labelled: "Lemon Creek, BC [CANADA]/ 117°16' 40'30"/ July 18,1967/ VIRGIN/ J.H. Shepard "; "HOLOTYPE/ *Iteaphila/ cirrata/ Shamshev* [red label]" (RBCM). **PARATYPES:** **CANADA. British Columbia:** Same as holotype, except 13.vii.1967 (1 ♂, RBCM). **RUSSIA. Khabarovsk Territory:** fields Ozerpakh, estuary of Amur R [53°02'32"N, 141°14'45"E], 15.iv.1915, Chernavin (2 ♂, ZIN); **Magadan Prov.:** Seymchan [62°55'51"N, 152°23'06"E], on window, 3.vii.1971, Gorodkov (1 ♂, ZIN).

Recognition. This species is distinguished by the long coiled phallus, short epandrium and projecting surstylus.

Description. Wing length 3.2–3.7 mm. **Male.** Head subtriangular, black, with black setation; occiput greyish brown pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish pollinose. Ocellar triangle very prominent, with 2 pairs of proclinate setae; anterior ocellars moderately long, posterior ocellars minute. Postvertical and postocular setae moderately long, thin; occiput covered with numerous similar setae finer in lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel 3 times longer than basal width, rather broad basally, smoothly tapered; stylus very short, bristle-tipped, segment 9 shorter than wide, apical bristle somewhat longer than segment 9. Proboscis long, projected obliquely; labium about as long as head is high; palpus projected parallel to labrum, nearly as long as labrum.

Thorax black, with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally rather subshining, viewed anteriorly velvety brown, with 2 indistinct paler vitae between acr and dc setae; pleura subshining, but not bare; otherwise finely brownish grey pollinose (sometimes entirely finely pollinose). Proepisternum with several brownish short bristly setae in lower and upper parts. Postpronotal lobe with 1–2 (usually 1) long and several short setae. Mesonotal setae prominent; acr short, biserial, close rows, separated from dc by length of acr, lacking on prescutellar depression; dc uniserial towards scutellum, with numerous lateral setulae obscuring row, mostly subequal in length to acr, 2–3 prescutellar pairs longer; 1–2 presut spal (sometimes with additional setulae), 2–3 npl (usually with additional thinner setae of different lengths), 2–3 psut spal, 1 long pal, 5 pairs of sctl.

Legs pale brown. Coxae and trochanters with numerous long bristly hairs. Fore femur with short, thin posteroventral setae longer subapically and with similar setae on dorsal and posterior faces. Mid femur with similar pattern of setation but posteroventral setae strong, spine-like on about apical half. Hind femur with moderately long, thin anteroventral and dorsal setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly brownish infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R₁; anal lobe very prominent, acute. R₂₊₃ dipped below stigma; radial fork with base proximal to opposite apex of R₂₊₃; R₅ and M₁ divergent before wing-apex; cell d broad, longer than basal cells, hardly produced apically, truncate; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly concave; M₄ somewhat shorter than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter brown.

Abdomen brown, shining, covered with short, black, thin setae. Terminalia concolorous with abdomen, small. Hypandrium rounded, upcurved apically and slightly prolonged dorsally; outer upper surface fluted acting as phallic guide; gonocoxal apodeme slender and short (Fig. 4D). Postgonite posterior to phallus, extended well beyond epandrium, parallel with phallus; apex sickle-shaped, roundly curved, mostly membranous. Epandrium not greatly inflated laterally; dorsal bridge very narrow; lamella narrow, apical third tapered; extended posteriorly into dorsally projecting surstylus; surstylus half-moon shaped, lacking pubescence, not projected medially. Phallus long and slender, with membranous subdivision at mid-length; apical half rounded, sickle-shaped arching beyond apex of epandrium forming second loop; ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme; dorsal margin of base of phallus produced posteriorly into slender lobe, strongly arched subapically forming slender trifid apex. Cercus long and slender, longer than half length of epandrium, projecting well beyond dorsal margin of epandrium; finger-shaped, tapered to with rounded apex; hypoproct produced into pair of long, slender divergent lobes, less than half as long as length of cercus.

Female. Unknown.

Etymology. The specific name is from the Latin *cirrus*, in reference to the coiled or curled phallus.

Distribution. This species is found in a single locality in southern British Columbia (Canada) (Fig. 5A) and in two localities in Kabarovsk Territory and Magadan Province of the Russian Far East (Fig. 12A).

Remarks. The phallus and postgonite of *I. cirrata* is similar to the derived form in *I. nitidula*. The latter has always been considered an odd species compared to others of the *I. macquarti* group, characterized by its elongate epandrium and prolonged phallus. The discovery of *I. cirrata* with its shortened epandrium, bridges the morphological gap between *I. nitidula* and other species of *Iteaphila*.

***Iteaphila falcata* Sinclair sp. nov.**

(Figs. 5A, 6A, B, C)

Type material. HOLOTYPE, ♂ labelled: "BC [British Columbia, Canada], Cathedral Prov./ Park, Quiniscoe L./ 7.vii.1986/ S.G. Cannings"; "HOLOTYPE/ *Iteaphila/ falcata/ Sinclair* [red label]" (UBCZ).

Recognition. This species is distinguished by its long proboscis (longer than head height), biserial acrostichal setae, apex of phallus very slender and sickle-shaped and the very long, slender hypoproct process.

Description. Wing length 3.4 mm. **Male.** Head subcircular, black, with black setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with several pairs of long, thin, proclinate ocellar setae. Postvertical and postocular setae long, thin, hair-like; occiput covered with numerous similar setae longer on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 2.5 times longer than basal width, smoothly tapered; stylus very short, one-third basal width of postpedicel, bristle-tipped, length of segment 9 shorter than width, apical bristle shorter than segment 9. Proboscis long, subequal to head height, projected obliquely; labium slightly shorter than head height; palpus projected parallel to labrum, two-thirds length of labrum.

Thorax dark brown, with black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, somewhat shiny, lacking vittae. Proepisternum with several brown setae in lower and in upper part. Postpronotal lobe with several fine setae and 1 prominent seta. Mesonotal setae mostly prominent, 4 npl and several finer setae, 2–3 prescutellar dc, 1 pal and sctl somewhat stronger; acr biserial, long, separated by half length of setula ending at prescutellar depression; dc long, subequal to acr, uniserial; 7 pairs of sctl in single row.

Legs brown. Coxae and trochanters with several short, fine setae. Fore and mid femora with row of long posteroventral setae. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly arched beneath stigma; radial fork with base well proximal to apex of R_{2+3} ; R_5 and M_1 slightly divergent before wing-apex; cell d broad, longer than basal cells, truncate apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly curved; M_4 longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter dark brown.

Abdomen narrowed proximad, covered with numerous, dark, long hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally subshiny, finely pollinose, viewed posteriorly brownish pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium gently rounded, upcurved apically with pointed apex; with pair of very long setae, closely approximated; gonocoxal apodeme long and broad (Fig. 6A). Postgonite posterior to phallus, extended posteriorly slightly beyond epandrium, parallel with phallus and strongly curved subapically; curved apical section membranous, expanded with roughened apical margin, lacking distinct microtrichia (Fig. 6B). Epandrium not greatly inflated laterally; dorsal bridge narrow; anterior portion subquadrate and very broad, posterior third slightly narrowed; inner face of apex of surstylus produced as short hook-like process. Phallus short and robust, possibly asymmetrical, arched slightly beyond epandrium posteriorly, strongly sickle-shaped subapically; apical section very slender and recurved, right hand side with slender dorsal process (Fig. 6C); ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme. Base of phallus produced posteriorly into trifid lobe; lateral pair sickle-shaped, slender; median lobe triangular, with broad base. Cercus tapered, long, more than one-half length of epandrium; finger-like with apex tapered and rounded; hypoproct produced into pair of long, narrow lobes.

Female. Unknown.

Etymology. The specific name is from the Latin *falcatus*, meaning sickle-shaped in reference to the strongly curved and slender apex of the phallus.

Distribution. This species is recorded from a single locality in southern British Columbia (Canada) (Fig. 5A).

Remarks. The apparent asymmetry of the phallus is possibly due to distortion during clearing of the terminalia. Additional specimens are required to verify the true condition of this structure.

Iteaphila furcata (Zetterstedt)

(Figs. 6D, 12A)

Anthalia furcata Zetterstedt, 1842: 252. Type locality: "Norvegia, ad diversorium Suulstuen Verdaliae" [Norway] [after lectotype designation].

Iteaphila nitidula: authors, not Zetterstedt, 1838, misidentification.

Type material examined. **LECTOTYPE** (here designated), ♀ labelled: [very small green square]; "A. *furcata*. / ♀. Suul [white, Zetterstedt's hand-written]"; "Suul [Verdal, Nord-Trøndelag] / Jug. alp. / Norveg. / 11–15.7.[18]40 [white, printed]"; "Lectotypus / *Anthalia* / *furcata* / Z. 1842 / design. 2004 / I. Shamshev [red, hand-written]"; "Empididae, Type no. 3027: 1–2, Zool. Mus. Lund Sweden" (ZMIL). **PARALECTOTYPE**: ♀, same data and style as lectotype, "*Anthalia furcata* Zett. 1842; Type no. 3027: 2, ZML" (ZMIL) [= *I. nitidula* Zett.].

Taxonomic notes. Zetterstedt (1842) described *I. furcata* after two female specimens assigned to the genus *Anthalia*. This species was subsequently largely unrecognized for a long time, usually misidentified as *I. nitidula* (see Tuomikoski (1958) for detailed discussion). In Zetterstedt's Collection (Lund) there are two syntypes of *I. furcata*. Both specimens are in good condition and one of them was designated as the lectotype of this species. The designation of the lectotype clearly establishes the identity of this species. The modern names for the type locality were determined using Pont (2011).

The second specimen bears the same data as the lectotype but it should be noted that actually the paralectotype of *I. furcata* is a female of *I. nitidula*. This fact was outlined for the first time by Tuomikoski (1958). Although Zetterstedt indicated some differences in colour of legs between both specimens in the original description of *I. furcata*, he nevertheless suggested that one specimen was teneral.

Additional material examined. **CZECH REPUBLIC.** Krkonoše, Labská louka, 1350 m, PT, 50°46'11"N, 15°32'32"E, 23–26.v.2001, Vaněk (2 ♂, BARC); Krkonoše, Labská and Pančavská louka, 1340 m, 50°46'07"N, 15°32'31"E, 16–17.vi.2005, MB (1 ♀, BARC); Šumava, Pěkná, peat-bog, yellow pan trap, 730 m, 48°51'05"N, 13°54'44"E, 14–16.vi.1997, MB & J. Roháček (1 ♀, BARC); Šumava Mts. 1100 m, Rokytecká slať, peat-bog, 49°00'59"N, 13°25'05"E, MT, 18.v.-16.vi.1999, MB & S. Kubík (2 ♀, BARC); Šumava Mts. 870 m, Nová Hůrka, forest, 49°09'N, 13°20'E, MT, 18.v.-16.vi., 15.vi.-21.vii.1999, MB & S. Kubík (3 ♀, BARC). **FINLAND.** Kuusamo, R. Frey, 1546 (1 ♀, CHVC). **GERMANY.** Bayerischer Wald, Spiegelau, 3 km N loc. 1, 48.57N, 13.22E, 760 m, 8.vi.1995, MB (1 ♂, 2 ♀, CHVC); Bayerischer Wald, Spiegelau, 4 km N loc. 2, 48.57N, 13.22E, 790 m, pan traps, 3–8.vi.1995, MB (3 ♀, CHVC); Bayerischer Wald, Spiegelau, 4 km N loc. 3, 48.57N, 18.39E, 820 m,

8–14.vi.1995, MB (2 ♀, BARC). **RUSSIA.** Khabarovsk Territory: fields Ozerpakh, estuary of Amur River [53°02'32"N, 141°14'45"E], 8–9.vi.1915, Chernavin (1 ♂, ZIN). **SWEDEN.** B.S., (P.Wg.) (1 ♂, NHRS); Dalarna, Leksand. Mosse, vid Sångbergsvägen, 10.vi.1971, T. Tjeder (1 ♀, CHVC); Dlc., Bhm [Boheman] (1 ♂, NHRS); O.G., Bhm [Boheman] (1 ♀, NHRS). **SWITZERLAND.** Marmorera GR, 2.vi.2000, 1600 m, G. Bächli (1 ♀, MHNG).

Recognition. This species is distinguished by the long and slender phallus, arched and recurved around the outer margin of the hypandrium, hypoproct process not free from the cercus and the surstylus is very slender and projects medially.

Re-description. Male. Wing length 2.6–2.8 mm. Head black in ground-colour, with black setation; occiput greyish brown pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, greyish pollinose. Ocellar triangle very prominent, with 2 thin, proclinate setae; anterior ocellars moderately long, posterior ocellars short. Postvertical and postocular setae moderately long, thin; additionally, occiput covered with numerous similar setae longer on lower part. Antenna brown; scape small, subequal to globular pedicel, both with short setae; postpedicel 3.5–4.0 times longer than wide, rather broad at base, smoothly tapered; stylus very short, bristle-tipped, segment 9 shorter than wide, nearly as long as apical bristle. Proboscis long, projected obliquely, nearly as long as head is high; palpus projected parallel to labrum, somewhat shorter than labrum.

Thorax black, with brown to black setation; scutum viewed dorsally dull black brown, viewed anteriorly brown pollinose, darker down acrostichal and dorsocentral setae; mesopleuron uniformly finely brownish grey pollinose. Proepisternum with several short, brownish bristly setae. Postpronotal lobe with 1 long and 2–3 short setae. Mesonotal setae prominent; acr short, arranged in 2 close rows, lacking on prescutellar depression; dc multiserial anteriorly, becoming uniserial towards scutellum, mostly subequal in length to acr, 2–3 prescutellar pairs and 1 posthumeral long; 1 long presut spal (sometimes with additional setulae), 3 npl (with 1–2 shorter setae), 2–3 short psut spal, 1 short pal and 4–5 pairs of sclt.

Legs wholly brownish (knees of fore and mid legs sometimes slightly paler). Coxae and trochanters with numerous long bristly hairs. Fore femur with rather short bristly hairs on posteroventral, posterior and dorsal faces. Mid femur with similar pattern of setation but posteroventral subapical setae slightly stronger. Hind femur unmodified; with moderately long (nearly as long as femur is deep) anteroventral and dorsal bristly setae shorter basally. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing finely brownish infusate, with brown veins; no bristle at wing base; stigma distinct, brownish, elliptical, overlapping apex of R_1 ; anal lobe very prominent, acute. R_{2+3} slightly sinuate apically; radial fork position of base varying before or opposite apex of R_{2+3} ; R_5 and M_1 parallel near wing-apex; distance between apices of R_{2+3} and R_4 as long as that between R_4 and R_5 ; cell d broad, longer than basal cells, slightly produced apically; m-m crossvein long, M branches widely separated; dm-cu crossvein straight. Apex of cell cua slightly rounded, CuP+CuA (anal vein) long, ending just short of wing margin. Halter brown.

Abdomen with tergites viewed dorsally and laterally dull brownish but viewed posteriorly velvety brown; with numerous moderately long dark bristly setae. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded and bifid apex, recurved acting as phallic guide; gonocoxal apodeme short and slender (Fig. 6D). Postgonite apparently fused to phallus. Epandrium not greatly inflated laterally; dorsal bridge very narrow; produced distally into slender surstylus; apex of surstylus with slender, bare finger-like projection medially. Phallus long and slender, arched and recurved around outer margin of hypandrium; ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme; base of phallus produced posteriorly into slender lobe, strongly arched with slender apex. Cercus tapered, more than half length of epandrium, broad basally, apex rounded, extended well free from epandrium; hypoproct produced into pair of very short, slender lobes, closely appressed to cercus; not projecting free from cercus.

Female. Dichoptic, with equally small ommatidia. Frons very broad, widened toward ocellar triangle, usually entirely shining, leaving only ocellar triangle finely pollinose, with marginal setulae. Occiput with stronger postvertical and postocular setae, than in male, and shorter bristly hairs in lower part. Scutum viewed dorsally or anteriorly subshining, finely brownish grey pollinose; mesopleuron wholly finely greyish pollinose. Mesonotal setae somewhat stronger than in male, scutellum with 4 pairs of setae. Legs apparently varying in colour but always considerably paler than in male (in lectotype legs, including coxae, almost wholly yellow, only hind femur dorsally

in apical part and apical tarsomeres brownish). Wing hyaline, with yellowish veins. Halter with brownish knob and brownish yellow stem. Abdomen viewed dorsally or posteriorly shining, tergites brownish, with short brownish setulae; sternites of basal segments paler (in lectotype largely yellowish). Cercus elongate, slender, brownish.

Distribution: This species is confined to the Palearctic Region, recorded from the following countries based primarily on material examined in the present revision: Czech Republic, Finland, Germany (also recorded in Schumann 2003), Norway, Russia (Arkhangelsk Prov., Karelia (based on published data), Khabarovsk Terr.), Sweden and Switzerland (Fig. 12A).

Remarks. Barták and Roháček (1999) classified *I. furcata* as a boreomontane species, occurring in hardwood forests and bogs. Polevoy (2006) indicates that in Karelia (Russia) this species was collected at the end of May in pine forest covered with bilberry. In Central Europe, this species is thought to occur most probably as local relict populations in mountainous regions.

Iteaphila maackii Loew

Iteaphila maackii Loew, 1871: 252. Type locality: Kultuk [Irkutsk Province, Russia] (incorrectly cited in Yang *et al.*, 2007: 348), *nomen dubium*.

Type material examined: HOLOTYPE, ♂ labelled: “Kultuk/ v. Maak [hand-written]”; [very small purple label]; “10558”; “Holotypus [red]”; “Zool. Mus. Berlin” (ZMHB).

Taxonomic notes. Loew (1871) described this species after a single specimen, which unfortunately was completely destroyed due to corrosion of the minuten pin. Loew’s species description was repeated in Engel’s (1941) review of Palearctic species. It is impossible to properly identify this species after its original description. Loew compared this species only with *I. macquarti*, however, the characters he noted indicate that *I. maackii* is rather similar to *I. nitidula* or *I. furcata* and possibly is a synonym of one of them (Tuomikoski 1958). Subsequently, we prefer to recognize *I. maackii* as a *nomen dubium* (unrecognized species of *Iteaphila*) and male specimens from the type locality are required to further assess the status of this species.

There are two original spellings of this species name in Loew (1871): *maackii* in the species header (p. 252) and index (p. 316) and *maacki* in the Remarks section (p. 253). By subsequent usage (Article 24.2.4 of ICZN 1999), Loew (1873: 216) acted as First Reviser and selected *maackii* as the correct original spelling.

Iteaphila macquarti Zetterstedt

(Figs. 1A, 2A, C, 3A, 6E, 7, 12B)

Iteaphila macquarti Zetterstedt, 1837: 31, *nomen nudum*.

Iteaphila macquarti Zetterstedt, 1838: 541. Type locality: “Naes in Werdalen Norvegiae” [Norway] [after lectotype designation].

Empis geniculata Zetterstedt, 1842: 375. Type locality: “Suecia super” [Sweden].

Hilara transfuga Walker, 1849: 491. Type locality: St. Martin’s Falls, Canada; Smith, 1971: 354.

Empis cornus Walker, 1849: 496. Type locality: St. Martin’s Falls, Canada; Smith, 1971: 354. **syn. nov.**

Steleocheta setacea Becker, 1887: 130. Type locality: not given [Switzerland, St. Moritz].

Iteaphila curva Curran, 1925: 24. Type locality: Nain, Labrador, Canada; Tuomikoski, 1958: 130.

Iteaphila cana Melander, 1946: 33. Type locality: Edmonton, Alberta, Canada. **syn. nov.**

Iteaphila fuliginosa Melander, 1946: 34. Type locality: Seattle, Washington, USA. **syn. nov.**

Type material examined. *Iteaphila macquarti*: LECTOTYPE (here designated), ♂ labelled: “*I. macquarti*/ ♂. Naes Boh. [= Boheman] [white label, in Zetterstedt’s writing]”; “Lectotypus/ *Iteaphila/ macquarti*/ Z. 1838/ design. 2004/ I. Shamshev & R. Danielsson [red, hand-written]”; “Empididae, Type no. 3028: 1–8, Zool. Mus. Lund Sweden” (MZLU).

Empis geniculata: HOLOTYPE, ♀ labelled: “[very small green square label] *E. geniculata*/ ♀. a Marklin [white, in Zetterstedt’s writing]; *Empis geniculata* Zetterstedt, 1842/ = *Iteaphila* / det. M. Chvála, 1992 /prope. *I. macquarti* Zett. [white, hand-written by M. Chvála]; Holotypus/ *Empis/ geniculata*/ Z. 1842/ design. 2004/ I. Shamshev [red, hand-written]; Empididae, Type no. 3029: 1, Zool. Mus. Lund Sweden (MZLU).

Steleocheta setacea: **HOLOTYPE**, ♀ labelled: “*Steleocheta/ setacea/ Beck./ 11264* [hand-written]”; “St. Moritz/ 11264. VII. [hand-written]”; “Typus [red]” (ZMHB).

Iteaphila curva: **HOLOTYPE**, ♂ labelled: “HOLOTYPE/ *Iteaphila/ curva/ Curr./ CNC No./ 1279*”; “Nain. Labr./ 15.vi.1922/ Waugh” (CNC).

Iteaphila cana: **LECTOTYPE** (here designated), ♂ labelled: “Edmonton, Alta./ 26 IV 1931/ E.H. Strickland”; “HOLOTYPE/ *Iteaphila/ cana Mel.* [red label]”; “ALMelander/ Collection”; “LECTOTYPE/ of *Iteaphila/ cana Mel./ des. B.J. Sinclair 2011*” (USNM). **PARALECTOTYPES**: same data as lectotype (1 ♀, CNC, 1 ♀, CNC) [= *Iteaphila bulbosa* sp. nov.]; Fawcett, Alberta. 8.v.1934, R.H. Strickland (1 ♀, USNM) [= *Iteaphila bulbosa* sp. nov.].

Iteaphila fuliginosa: **HOLOTYPE**, ♂ labelled: “Seattle Wash/ 5 20 02”; “Anthalia”; “HOLOTYPE/ *Iteaphila/ fuliginosa/ Mel.* [red label]”; “ALMelander/ Collection” (USNM). **PARATYPES**: **USA. Oregon**: Mary’s Peak, 8.iii.1926, D.A. Wilbur (1 ♂, USNM). **Washington**: O.B. Johnson (4 ♂, USNM).

Taxonomic notes. Zetterstedt (1838) described *I. macquarti* after several specimens collected in different localities in Sweden, Norway and Finland (e.g., “Lapponia Suecia, Nordlandiae Finmarkiae; Björkvik juxta Ofotenfjord ad Naes in Werdalen Norvegiae, alpinum Tornensium, Lapp. Bottnia bor., Johanis Ro”). Among the syntypes a male was separated that we have designated as the lectotype and additionally, we designated seven specimens as paralectotypes.

Zetterstedt (1842) described *Empis geniculata* after a single female specimen. The synonymy was proposed by Tuomikoski (1958) and confirmed here.

Becker (1887) described *Steleocheta setacea* after a single female specimen. The synonymy was proposed by Tuomikoski (1958) and confirmed here.

Smith (1971) examined the Walker Empididae types and assigned *Hilara transfuga* as a synonym of *I. macquarti*. We confirm this decision based on the illustration of the male terminalia of the former species (Smith 1971, fig. 6). Smith (1971) maintained *I. cornus* as a distinct species on the basis of the shiny female frons. But on the basis of the infuscated wing veins (Smith 1971, pl. 1: fig. 9) it is herein assigned as a junior synonym of *I. macquarti*. Melander (1946: 34) states that C.W. Johnson identified material from Mt. Washington (in USNM) as *I. cornus* and these females are also definitively *I. macquarti*.

Melander (1946) described *I. cana* based on one male and three female syntypes. Holotype and paratype labels were added subsequent to the publication as no holotype was originally designated. Since the description is based on the male, this specimen was labelled as the lectotype accordingly, to fix and stabilize the current concept of the name. This was especially important since the female syntypes, although dirty are clearly *I. bulbosa* sp. nov. based on the brownish scutellar setae.

The designation of the lectotypes clearly establishes the identity of these species.

Additional material examined. CANADA. Alberta: Banff, 25.v.-2.vi., 20.vii.1922, C.B.D. Garrett (17 ♀, CNC, USNM), ditto, 25.vi.1925, O. Bryant (1 ♀, CAS); Banff, 29.v.1924, E. Hearle (1 ♂, CNC); Banff, 4455 ft, roadside, 26.v.1960, R.J. Pilfrey (2 ♀, CNC), ditto, Sunshine Lodge, 7500 ft, 9.vii.1962, W.R.M. Mason (2 ♂, 3 ♀, CNC); Banff NP, 12–17.vii.1955, R. Coyles (8 ♀, 16 ♀, CNC), ditto, Larch valley, 7.vii.1965, F. Schmid (1 ♂, 5 ♀, CNC), ditto, Mt. Eisenhower, on *Salix*, 2–17.v.1968, Mosquin & Seaborn (331 ♂, 168 ♀, CNC), ditto, Mt. Norquay, 25.v.1960, JGC (1 ♂, CNC), ditto, Peyto Lookout, 8000 ft, 23.vii.1962, K.C. Hermann (3 ♀, CNC), ditto, Snow Ck Pass, 7400–7600', 24.vi.1962, K.C. Herrmann, W.R.M. Mason (13 ♂, 5 ♀, CNC), ditto, Victoria Glacier, 6000–6500 ft, 18.vii.1955, R. Coyles (1 ♀, CNC); Banff-Jasper Hwy, Sunwapta Pass, 6600 ft, 9.vii.1955, R. Coyles (1 ♂, CNC); Edmonton, U of A Ecol. Res., MT, 13–22.v.1986, B.V. Brown (1 ♂, CNC); Elkwater, 49°42'N 110°16'W, 29.v.1955, JRV (3 ♀, CNC); 8 km W Lk Louise, 31.v.1992, AB (5 ♀, 1 ♀, CNC); Seebe, 23.iv.1949 (3 ♂, CNC); Waterton Lakes NP, Cameron Lk, 17–18.vi.1956, O. Peck, E.E. Sterns (20 ♂, 5 ♀, CNC). **British Columbia**: Agassiz, 10–12.iv.1926, R. Glendenning (2 ♀, CNC); 831 km Alaska Hwy “Whirlpool Canyon”, 9.vi.1996, PHA & M.M. Arnaud (2 ♀, USNM); Alaska Hwy, truck bugscreen between Prophet River PP & Muncho Lk, 7.vi.1996, PHA & M.M. Arnaud (7 ♂, 11 ♀, USNM); Atlin, 2200–4800 ft, 5–24.vi.-16.vii.1955, B.A. Gibbard, H. Huckel (3 ♂, 7 ♀, CNC); Buckingham River PP, 279 km N Dawson, on *Salix*, 6.vi.1996, PHA & M.M. Arnaud (19 ♀, USNM); Cathedral PP, Glacier Lk, 7.vii.1986, R.A. Cannings (2 ♂, 1 ♀, RBCM); Clinton, 19.vi.1938, G.S. Walley (1 ♀, CNC); Cranbrook, 17.v.1922, C.B.D. Garrett (1 ♀, CNC); Englewood, 20.iv.1952, H.A. Magel (1 ♂, UBCZ); 4 km E Kingfisher, 50°36.92'N 118°40.801'W, flowers of *Shepherdia*, 11.iv.2010, AB (10 ♂, 2 ♀, CNC); Galena Bay, 3.v.1964, P. Wilkinson (1 ♀, CNC); Galiano Is, Spanish Hills, 8.iv.1979,

30.iii.1980, 8.ii.1981, G.G.E. Scudder (4 ♂, 2 ♀, UBCZ); Glacier NP, Rogers Pass, 30.vi.1968, W.W. Wirth (9 ♂, 12 ♀, USNM); Kleanza Ck, 14 miE Terrace, 17.vi.1960, CHM (1 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 1 & 2, MT, 25.vi.-9.vii.2000, G. Gareau (2 ♀, CNC); Laird R Hotspings, 24.v.1981, L. Washington, S.G. Cannings (1 ♀, UBCZ); Laval Lk, 50 miN Terrace, 31.v., 14–30.vi., 8.vii.1960, JGC, CHM, R. Pilfrey (6 ♀, CNC); Lisadale Lk, 58°41'N 133°04'W, 4000 ft, 9–11.vii., 6.viii.1960, WWM (7 ♂, 6 ♀, CNC); Manning Pk, Dry Ridge summit, 1830 m, 25.vi.1983, S.G. Cannings (1 ♀, UBCZ); Manning Pk, Lightning Lk, 16.v.1969, M.J. Hale (3 ♂, RBCM); Moosehorn Lk, 58°10'N 132°07'W, 26–29.vii.1960, on flowers of *Heracleum lanatum*, R. Pilfrey, WWM (2 ♀, CNC); Mt. Revelstoke NP, 5400–6300 ft, 3–25.vii.1952, G.P. Holland, GJS (1 ♂, 28 ♀, CNC); Mt. Thornhill, nr Terrace, nr summit on snow 4500 ft, flowers of *Aruncus sylvestris*, 21.vi.1960, JGC, R.J. Pilfrey (6 ♂, 4 ♀, CNC); Pleasant Camp, 3.8 mi N, 2.vi.1981, CSG (2 ♂, 38 ♀, UBCZ); Prince Rupert, 20–23.iv.1933, M.E. Hippiusley (2 ♂, USNM); Salmon Arm, 2.v.1991, 31.iii.1992, AB (4 ♂, 2 ♀, CNC); 3 kmE Salmon Arm, 4.v.1992, AB (10 ♀, CNC); 11 kmSW Salmon Arm, 28.v.1992, AB (22 ♂, 2 ♀, CNC); Seltat Ck, 28.v.1979, G.G.E. Scudder (1 ♀, UBCZ); 8 kmE Sicamous, 8.vi.1992, AB (5 ♂, 11 ♀, CNC); Sooke, Camp Bernard, 9.iv.1988, CSG (1 ♂, RBCM); South Fork Ck, 11.viii.1903, R.P. Currie (1 ♀, USNM); Summit Lk, mi 392 Alaska Hwy, 4200 ft, 13.vi.-1.vii.1959, E.E. MacDougall, R.E. Leech (23 ♂, 105 ♀, CNC); Summit Lake PP, Cpgd, 29.v.1997, T.A. Wheeler (1 ♀, LEM); Terrace, 1–14.iv.1933, M.E. Hippiusley (2 ♂, USNM); Toad R, mi 440 Alaska Hwy, 4500 ft, 19.vi.1959, E.E. MacDougall (1 ♂, 1 ♀, CNC); Tunjony Lk, 58°26'N 132°45'W, 3200 ft, 19.vii.1960, R. Pilfrey (3 ♀, CNC); UBC, 18–21.iv.1955, B.A. Hardy (4 ♂, UBCZ); Vancouver, Lions Bay, 22.v.1961, GJS (1 ♀, UBCZ); Vancouver, Point Grey, 17–30.iii.1973, JRV (3 #, 1 ♀, CNC); Vancouver, 7, 24.iii.1906, 28.iii., 9.iv.1915, 8.v.1921 (2 ♂, 1 ♀, UBCZ; 2 ♀, USNM); White Rock, 9.iii.1973, JRV (1 ♂, CNC). **Manitoba:** mi 505 Hudson Bay Railway, 13.vi.1952, JGC (2 ♀, CNC); Churchill, 14.vi.1947, C.R. Twinn (1 ♂, CNC); Churchill, 17–25.vi.1948, GES (14 ♂, 84 ♀, CNC); Churchill Area, Burn site N of Twin Lks, 58°37'07"N 93°49'44"W, 26.vi.2007, J. Skevington (1 ♀, CNC); Churchill Area, Burn site S of Twin Lks, 58°36.92'N 93°49.33'W, 11–15.vii.2009, J.M. Cumming (1 ♀, CNC); Churchill Area, Ramsay Lk Ck, 58°43.94'N 93°46.86'W, 13.vii.2009, J.M. Cumming (2 ♀, CNC); Churchill Area, Twin Lks, road along Kame, 58°37.94'N 93°47.66'W, 8.vii.2009, J.M. Cumming (1 ♀, CNC); Fort Churchill, 3–28.vi.1952, C.D. Bird, JGC (7 ♂, 13 ♀, CNC), ditto Eastern Ck, 9.vii.1952, JGC (1 ♀, CNC), ditto, Farnworth Lk, 12.vi.1952, JGC (1 ♀, CNC), ditto, Warkworth Ck, 10.vi.1952, C.D. Bird (1 ♀, CNC). **New Brunswick:** Fredericton, on *A. piceae*, 11.v.1959, N.R. Brown (1 ♂, CNC); Fredericton, 6.v.1935, C.E. Atwood (1 ♂, ROM); Kouchibouguac NP, 12–24.v.1977, J.D. Lafontaine, W.P. Hanley, BEC, S.J. Miller, G.A. Calderwood (7 ♀, CNC); St. Andrews, 20,22.v.1978, SAM (1 ♂, 1 ♀, DEBU). **Newfoundland & Labrador:** Cartwright, 24.vi.-12.vii.1955, E.F. Cashman, E.E. Sterns (2 ♂, 19 ♀, CNC); Goose Bay, 10.vi.1948, W.W. Judd (1 ♀, CNC), ditto, 26–28.v.1950, J.J. Tibbles (3 ♂, 1 ♀, CNC); Nain, Anatalak Bay, Rawson-MacMillan Exped., 1–17.vi.1928, A.G. Weed (1 ♀, FMNH). **Northwest Territories:** Aklavik, 5–22.vi.1931, O. Bryant (27 ♂, 40 ♀, CAS); Bathurst Inlet, 28–30.vi.1951, W.I. Campbell (4 ♂, CNC); Muskox Lk, 64°45'N 108°10'W, 12.viii.1953, JGC (1 ♀, CNC); Norman Wells, 16–25.v.1953, C.D. Bird, J.S. Waterhouse (1 ♂, 4 ♀, CNC); Reindeer Depot, Mackenzie Delta, 26–27.vi.1948, JRV (4 ♂, 3 ♀, CNC); Salmita Mines, 64°05'N 111°15'W, 16–19.vi.1953, JGC (2 ♂, 12 ♀, CNC); Sawmill Bay, 23.vi.1948, D.F. Hardwick (1 ♀, CNC); Wrigley, 7.vi.1969, GES (3 ♀, CNC); Yellowknife, 16.v.-1.vi.1953, JGC (4 ♀, CNC). **Nova Scotia:** Cape Breton Highlands NP, QG038793, 5.vi.1984, BEC (4 ♀, CNC), ditto, Mackenzie Mtn, 400 m, PG639848, 2.vi.1984, BEC (1 ♀, CNC), ditto, Pleasant Bay, PG682873, 5–7.vi.1984, BEC (2 ♀, CNC); Queens Co., Greenfield, 10–13.v.1968, DMW (1 ♀, CNC). **Nunavut:** Hayes River, 3.vi.1951, P.R. Ehrlich (1 ♀, CNC); Padlei, 30.vi.-18.vii.1950, R.A. Hennigar (5 ♂, 3 ♀, CNC). **Ontario:** Algonquin PP, Petawawa/ Lk Traverse, 22.iv.2007, BJS (3 ♂, 1 ♀, CNC); Algonquin PP, 4.vi.1989, J. Skevington (1 ♀, DEBU); Algonquin PP, Swan Lk Stn, Scott Lake Survey, 45°29'15"N 78°43'20"W, MT A1, lakeshore, 8–18.v.1993, Larson, SAM, Barr (1 ♂, DEBU); Chalk River, on *Salix* catkins, 26.iv.1953, J.F. McAlpine (4 ♂, CNC); Cobden, 7.v.1957 (1 #, CNC); Dirlerton, 29.iv.1968, J.E.H. Martin (1 ♂, 2 ♀, CNC); Lake Abitibi, Low Bush, 8.vi.1925, N.K. Bigelow (1 ♀, CNC); Maynooth, 6.v.1963, J.E.H. Martin (1 ♂, 1 ♀, CNC); Nakina, 6.vi.1947, W.Y. Watson (1 ♀, ROM); Quibell, 4.v.1983, D.B. Stoltz (3 ♂, DEBU); same data, 5.v.1959, E.A. Cameron (1 ♂, 3 ♀, DEBU); Shakwa Lk, Ouellette Twp, 21.v.1996, A. Applejohn (1 ♀, DEBU); Toronto, v.1885, I.C.W (2 ♂, 1 ♀, ROM); Wabos, 5.v.1984, D. Poirier (3 ♂, 3 ♀, DEBU). **Quebec:** Fort Chimo, 19.vi.1948, H.N. Smith (1 #, CNC); Gatineau Co., Duncan Lk, 45°40'53"N 76°03'01"W, 2.v.2001, DMW (2 #, CNC); Gatineau Pk, Harrington Lk, 30.v.-3.vi.1954, J.E.H. Martin, E.E. Sterns (2 ♀, CNC); Great Whale R, 17–20.vi.1949, JRV (2 ♀, CNC); Indian House Lk, 9.vii.1954, W.R. Richards (1 ♀, CNC); Lac Mondor, Ste. Flore, 15-17.v.1951, E.G.

Munroe (1 ♂, 12 ♀, CNC); Masham Twp., Gatineau Co., 21.iv.1973, 16–19.iv.1976, DMW (2 ♂, 1 ♀, CNC); Mistassini Post, 13–16.vi.1956, J.R. Lonsway (3 ♀, CNC); Mt. Albert, 20.vi.1954, G.P. Holland (1 ♀, CNC); Payne Bay, 25.vii., 2.viii.1958, W.R.M. Mason (2 ♀, CNC); Rupert River, 19.vi.1956, J.R. Lonsway (1 ♀, CNC); Seven Is., 8.vi.1929, W.J. Brown (2 ♀, CNC); Schaefferville, Iron Arm Fern, 21.vi.1990, P. McElligott (1 ♂, LEM).

Saskatchewan: Cypress Hills, 26.v.1955, JRV (7 ♂, 13 ♀, CNC). **Yukon:** mi 687 (1144 km) Alaska Hwy, Rancheria Cpgd, at catkin *Salix* sp., 10.vi.1996, PHA & M.M. Arnaud (2 ♀, USNM); mi 752 (1250 km) Alaska Hwy, Morley R Rec. Site, at catkin *Salix* sp., 11.vi.1996, PHA & M.M. Arnaud (4 ♂, 26 ♀, USNM); Alaska Hwy, km 1666, ca. 0.25 mi W Jarvis R., 60°56'N 137°53'W, in bog, 7.vi.1979, #791005a. ROM Fld Pty (1 ♀, ROM); British Mts, 69°13'N 140°05'W, 320 m, 18–20.vi.1984, D. Lafontaine, G. Wood & DMW (1 ♂, 2 ♀, CNC); 34 miW Dawson, Swede Dome, 3900', 6.vi.1962, R.E. Leech (1 ♂, 2 ♀, CNC); mi. 51 Dempster Hwy, 17–21, 25–27.vi.1973, G. Wood & DMW (8 ♂, 20 ♀, CNC); mi 91 Dempster Hwy, 6.vi.2003, AB (9 ♂, 5 ♀, CNC); Jeff Ck, 8 kmW Fuller Lk, 62°59'N 130°26'W, 10.vi.1981, CSG (2 ♀, UBCZ); Jarvis R, km 1665 Alaska Hwy, on willow, 60°56'N 137°53'W, 7.vi.1979, J.A. Downes (11 ♀, CNC); Johnson's Crossing, 10 mi N, 6.vi.1981, CSG (8 ♂, 11 ♀, UBCZ); Klondike Hwy, km 12, Ethel Lake Rd, 63°19'N 136°21'W, 30.vi.1980, #800067d. ROM Fld Pty (2 ♀, ROM); Macmillan Pass, 10.vi.1981, CSG (1 ♂, 5 ♀, UBCZ); km 158, Nahanni Range Rd, 25.vi.1985, E. Krebs & J.J. Robinson (1 ♀, UBCZ); North Fork Crossing, mi 42 Peel Plateau Rd., 3500', 24–25.vi.1962, PJS (7 ♀, CNC); North Fork Pass, Ogilvie, 4100–4300', 12–19.vi.1962, R.E. Leech, PJS (39 ♂, 144 ♀, CNC); Orchie Lk, 3 km N, N Canol Rd, 62°11'N 131°48'W, 11.vi.1981, CSG (3 ♀, UBCZ); Quiet Lk, 6.vi.1981, CSG (1 ♂, 1 ♀, UBCZ); Rampart House, 20.v.–5.vi.1951, J.E.H. Martin, C.C. Loan (17 ♂, 47 ♀, CNC); Swim Lakes, 133° 62' 13', 3200', 10.vi.1960, E.W. Rickburne (1 ♀, CNC); Whitehorse, 12.vi.1949, 25.v.1953, C.D. Bird, B. Hocking (3 ♂, CNC); Windy Pass, 65°04'N 138°15'W; 10–14.vi.1987, J. & L. Troubridge (2 ♀, CNC).

FINLAND. Kilpisjärvi lake, Saana Mt. env., 9.vii.1992, tunturi, B. Mocek (1 ♀, BARC); Kuusamo, J.E. Aro (1 ♂, CHVC). **ITALY.** Mörszil, 18.vi, 42713 (1 ♀, ZMHB); Rolle-Pass, 20.vi.1890, 25631 (1 ♀, ZMHB).

MONGOLIA. Khövsgöl, Aimag: Alag Tsar River, 29 km ENE Khatgal, 50°26'26"N 100°23'30"E, 1693 m, 12.vi.1996, J. Gelhaus No. 714, E. Hunter (7 ♀, ANSP); Khövsgöl, Aimag: Borsogiyn gol [river], 50°55'32"N 100°43'19"E, 1640 m, 14.vi.1996, J.K. Gelhaus No. 716, E. Hunter (1 ♀, ANSP); Khövsgöl, Aimag: S of Dalbayn Khyr, 50°59'22"N 100°43'01"E, 1695 m, 14.vi.1996, J.K. Gelhaus et al. No. 719 (1 ♀, ANSP); Khövsgöl, Aimag: Khövsgöl Nuur [lake] area, E side, Noyon gol [stream], 51 km S Khankh, 51°12'11"N 100°47'41"E, 1669 m, 18.vi.1996, J.K. Gelhaus No. 725, B. Namkhaidorj et al (2 ♀, ANSP); Khövsgöl, Aimag: Khövsgöl Nuur [lake] area, E side, Sevsuuliyng gol [river], 58 km S Khankh, 51°09'42"N 100°45'21"E, 1626 m, 17–18.vi.1996, J.K. Gelhaus No. 724, B. Namkhaidorj, E. Hunter et al. (1 ♀, ANSP); Uрга [= Ulan Bator or Ulaanbaatar, 47°55'N, 106°55'E], 22.v.1925, Kozlov (1 ♀, ZIN); Ravine Sutszunkte, SW Kentey [about 48°34'N, 110°42'E], 12–28.v.1925, Kozlov (1 ♀, ZIN); same locality, 1–5.vi.1925 (1 ♀, ZIN).

NORWAY. Kongsvoll, 9–1100 m, 12–20.vi.1985, O. Karsholt & V. Michelsen (2 ♂, 1 ♀, NHRS); Troms. Kvaenangs fj., 3.vii.1956, 52 Rished, reg. alp., H. Andersson (1 ♀, MZLU).

RUSSIA. **Altay Republic:** Shamshev & Barkalov, 2009. **Amur Prov.:** Zeya, 24.vi.1982, M. Krivosheina (1 ♀, ZMMU). **Arkhangelsk Prov.:** Ekaterininsky Island [about 69°11'N, 33°27'E], 1.vi.1908, L.V. Bianki (1 ♂, ZIN); same locality, 9.vi.1908 (1 ♀, ZIN); same locality, 29.vi.1908 (1 ♀, ZIN). **Chita Prov.:** Transbaicalia [52°02'N, 113°30'E], 22.v.1920, Redikortseva (1 ♀, ZIN); same locality, 1.vi.1920 (1 ♂, ZIN). **Khabarovsk Terr.:** Bolshoy Shantar Island, valley of Yakshin River [55°05'N, 137°35'E], 30.v.1926, Dul'keyt (2 ♂, ZIN). **Magadan Prov.:** Magadan [59°34'N, 150°48'E], 16.vi.1963, Zhelokhovtsev (2 ♂, ZMMU); basin of Arma R, Mukul'chak R tributary of Iganja, 102 km of Palatka [about 60°10'N, 150°94'E], larch forest, 2.vii.1971, Gorodkov (1 ♂, 1 ♀, ZIN). **Murmansk Prov.:** Kola Peninsula, Pulozero, Arkangel'skaya gubernia [68°20'00"N, 33°17'00"E], 10.vi.1926, Kapustin (3 ♀, ZIN); same locality, 14.vi.1926 (6 ♀, ZIN); Vudyavr Lake, Khibiny, Kola Peninsula [67°37'50"N 33°40'15"E], 12.vi.1930, Fridolin (1 ♂, 2 ♀, ZIN); same locality, 14–21.vi.1930 (12 ♂, 5 ♀, ZIN); same locality, 24.vi.1930 [one wing without radial fork] (1 ♂, ZIN); same locality, 7–29.vi.1931 (20 ♂, 11 ♀, ZIN). **Tyumen' Prov.** (Khanty-Mansy Autonomous Okrug—Yugra): Kondinskoe [59°39'N, 67°24'E], 8.vi.1925, Fridolin (1 ♂, ZIN). Berezov [= Berezovo, 63°56'00"N, 65°03'00"E], 10.vi.1925, Fridolin (1 ♂, ZIN). Obdorsk [= Salekhard, Yamal-Nenets Autonomous Okrug], Ob'—Malaya Khanema R, tundra [about 66°32'N, 66°38'E], 18.vi.1925, Fridolin (2 ♀, ZIN); same locality, 24.vi.1925, Fridolin (1 ♀, ZIN); same locality, 27.vi.1925, Fridolin (7 ♂, 6 ♀, ZIN); same locality, 4.vii.1925, Fridolin (1 ♂, ZIN). **Yakutia:** env. Yakutsk [62°02'N, 129°42'E], 23.v.1927, Nikiforov (1 male, ZIN); same locality, 9.vi.1927, Moskvina (4 ♀, ZIN); Khaptagay [61°47'N, 129°47'E], on *Salix*, 21.v.1973, Bagachanova (1 ♂, ZIN); Kolyma, Nizhnie Kresty [= Cherskiy, 68°46'06"N, 161°19'47"E], 26.vi.1963,

Gorodkov (1 ♂, ZIN); Oktemtsy, 50 km SSW of Yakutsk, 26.v.1977, Maksimov (1 ♀, ZIN); same locality, 1.vi.1977 (1 ♀, ZIN). **SLOVAKIA**. Vysoké Tatry, Slezský dom, 29.v.1968, M. Chvála (2 ♀, CHVC). **SWEDEN**. Abisko, 30.vi.1932, J.C. Bradley (2 ♀, CUIC); Abisko am Torneträsk, 10.vi.1937, W. Brandt (1 ♀, CHVC); Abisko, Lpl, vii.1950, 13–27.vi., 6.vii.1951, JRV (34 ♂, 62 ♀, CNC); Dlr. Floda, Sångån, 15.v.1971, T. Tjeder (1 ♀, MZLU); Dlr. Floda, Sångtorpet, 1–11.v.1971, T. Tjeder (3 ♀, MZLU); Dlr. Idre, 6.v.1934, G. Sthen (1 ♂, MZLU); Dlr. Leksand, Sångån, 25.v.1975, T. Tjeder (2 ♀, MZLU); Dlr. Ore, Bruket, 14.v.1974, T. Tjeder (1 ♀, MZLU); Åre, vi. 42958 (3 ♀, ZMHB); Ås. Lpm., Borkajaure, 1.5 km. 7 km WNW Kittelfjäll ESE Borkan. Lok. 3. 28.vi.1967, Brinck, Enckell (1 ♀, MZLU); Ås. Lpm., Vojmán, 11 km E Kittelfjäll. Lok. 1. 28.vi.1967, Brinck, Enckell (1 ♀, MZLU); Dlr. Leksand, 26.v.1976, T. Tjeder (2 ♀, MZLU); Dlr. Leksand, Sångån, 18,25.v.1974, 25.v.1975, T. Tjeder (1 ♂, 1 ♀, CHVC; 1 ♂, 8 ♀, MZLU); Lu. Lpm. Niakajokk. 6 km NO Kvikkjokk, 2.vii.1959, Brinck, Cederholm, Wingstrand (1 ♀, MZLU); Ly. Lpm., Vapstälven, 1 km E Nedre Vapstsjön. Lok. 18. 37 km NW Kittelfjäll, 30.vi.1967, Brinck, Enckell (1 ♀, MZLU); N.B. Vittjär, 30.v.1936, Y. Melander (1 ♀, MZLU); Nb. Boden, S.O. Ulefors (1 ♂, MZLU); T. Lpm. Abisko, loc. 1 Abiscodalen, 25.vi.1957, P.I. Persson (1 ♂, CHVC); N. of Kiurna, 13:00–13:10 pm, ex. truck trap, P.H. Adler (3 ♀, ZFMK); Sikselberg, Lycks Lpm., 20.v.1943, K.J. Hequist (1 ♀, MZLU); To Krokvik, 500 m, 20.vi.1994, Huber (1 ♀, OLML); Sarek, B. Poppius (1 ♂, 1 ♀, ZMH); T. Lpm. Abisko, 11–22.vi.1954; J.E. & R.B. Benson (1 ♂, 1 ♀, MZLU); T. Lpm Abisko, loc. 4, Nuoljätunneln 14.vii.1958, P.I. Persson (1 ♀, MZLU); T. Lpm. Abisko, 3.vii.1957, P.I. Persson (1 ♀, MZLU); T. Lpm. Kaisepakte, loc. 5, 24.vi., 15.vii.1957, P.I. Persson (2 ♀, MZLU); T. Lpm., SE Övre Kilpisjärvi, Salmiäive, 29.vi.1961, Lok. nr. 33, Brinck, Askaner, Cederholm, Ulfstrand (2 ♀, MZLU); T. Lpm. Stordalen, loc. 2, 26.vi., 8.vii.1957, P.I. Persson (4 ♀, MZLU); Torne Lappmark, Selkavaara, 68°27'N 20°47'E, 16.vi., 12–13.vii.1955; Birch wood, marsh; J.P.S. Pringle (1 ♂, 3 ♀, MZLU); To. Abisko, Kungsleden vid Abiskojokk, 23.vi.1985, T. Mireström (1 ♀, MZLU); Troms. Kvaenangs fj., 3.vii.1956, 52 Rished, reg. alp., H. Andersson (1 ♀, MZLU). **USA**. **Alaska**: Anchorage, 25.v.-5.vi.1951, R.S. Bigelow (3 ♂, 3 ♀, CNC); Anchorage, Chugach Mt., 2500 ft, *Salix* catkins, 30.v.1948, Sailor & Somerman (4 ♂, USNM); Chitina, 22.v., 2.vi.1953, W.C.F. (1 ♂, 2 ♀, WSU); mi. 32 Denali Hwy, 4500 ft, 22.vii.1962, R.E. Leech (1 ♀, CNC); Glenn Allen, 30.v.1949, W.C.F. (1 ♂, USNM); Hurricane, 18.vi.1921, J.M. Aldrich (1 ♀, USNM); Kenai NWR, 2 km N Indian Ck, 3100 ft, 18.vi.2004, J. Lewis (1 ♂, UAM); Kenai NWR, 0.5 mi NW Benjamin Ck, 3.5 mi NE Killey R, 13.vi.2006, A. Wu (1 ♀, UAM); Kenai Peninsula, Mystery Hills, N60°31.798' W150°9.466', 2.vi.2001, E. Stanley (1 ♂, 1 ♀, UAM), same locality, N60°31.603' W150°10.820', on anthers of *Salix*, 2.vi.2001, M.L. Bowser (2 ♀, UAM); Matanuska, Rotary tp, 27.iv.-15.v.1944, J.C. Chamberlain (110 ♂, 118 ♀, USNM); Mt. McKinley NP, 11.vi.1931, F.W. Morand (4 ♂, USNM); Naknek, AFB, 11.v.1954, W.C.F. (1 ♂, WSU); Palmer, 30.iv.-26.v.1950, 10.v.1951, R.H. Washburn (2 ♂, 4 ♀, USNM); mi. 206 Richardson Hwy, Isabel Pass, 5000 ft, 17.vii.1962, REL (1 ♀, CNC); mi 213 Richardson Hwy, 17.vi.1951, J.R. McGillis (3 ♀, CNC); Richardson Hwy, Black Rapids, 2.vi.1951, W.R.M. Mason (3, CNC); Savonoski, Naknek Lk, 4.vii.1919, Katmai Exped., A.J. Basinger (1 ♀, CAS); Skagway, White Pass Tr, 5,18.v.1923, J.A. Kusche (1 ♂, 8 ♀, CAS); Taylor Hwy, Walker Fork Cpgd, 18.vi.1996, PHA & M.M. Arnaud (1 ♀, USNM); Tonsina, 27.v.1954, W.C.F. (5 ♂, CNC, USNM); Valdez, 16.vii.1949, W.C.F. (1 ♀, USNM). **California**: Mono Co., Tioga Pass, *Salix orestera*, 11.vii.1969, A.R. Moldenke, Nos 1999, 2014 (2 ♀, CAS). **Colorado**: Carbonate to Prairie Hills Br, 12–18.vii.1908, J.C. Bradley (1 ♀, USNM); Gunnison Co., Spring Ck Cpgd, 6 mi N Almont, 5.vi.1992, JFM (6 ♂, 32 ♀, CNC); Mt. Evans, Doolittle Ranch, 9800 ft, 8.vii.1961, CHM (4 ♀, CNC), ditto, Echo Lk, 10600 ft, 13.vii.1961, CHM (2 ♀, CNC), ditto, Timberline, 11600 ft, 11,22.vii.1961, CHM, BHP (2 ♀, CNC); Nederland, Science Lodge, 9500 ft, 28.vi.-3.vii.1961, CHM, BHP (2 ♂, 2 ♀, CNC); Niwot Ridge nr. Ward, 11700 ft, 28.vi.-4.vii.1961, CHM, W.R.M. Mason (3 ♂, 14 ♀, CNC); Pikes Pk, 19.vi.1940, ALM (3 ♂, 3 ♀, USNM); Pikes Pass, Halfway House, 30.v., Cockerell (1 ♂, USNM); Telluride, Cornet Ck, 9.vii.1919, 37°55'N 107°45'W, 11000 ft (1 ♀, AMNH); Ward, Lk Isabelle, 24.vi.1922, 10800 ft (1 ♀, AMNH). **Maine**: Katahdin, 2–3.v.1959 (4 ♂, 3 ♀, USNM); Mt. Katahdin, nr Saddle Spring, 4300 ft, 3.vii.1968, P. Ward (2 ♂, CNC); Orono, 1.v.1913, H.M. Parshley (1 ♀, CAS). **Michigan**: Marquette Co., 15 mi NW Big Bay, Huron Mt. Club, v.1993 (1 ♀, CNC). **Montana**: Ravalli Co., 5 mi E Lost Trail Pass, 28.vi.1952, C.B. Philip (11 ♀, CAS), ditto, 26.vi.1952, W.L. Jellison (1 ♀, CAS). **New Hampshire**: Halfway H, Mt. Washington, 13.vii.1916, C.W. Johnson (2 ♀, USNM). **New Mexico**: Taos, Wheeler Peak, 12500', 15–25.vi.1960, Burks & Kinzer (1 ♀, USNM). **New York**: Hamilton Co., 10km E, Indian Lk, 43°45'30"N, 74°10'14"W, 555 m, 21.v.1980, T.L. McCabe (3 ♀, BARC). **Oregon**: Bethel, 19.v., 20.vi.1956, W.C.F. (1 ♂, 1 ♀, WSU); Detroit, willow, 11.iv.1939, K. Gray, J. Schuh (3 ♂, WSU); Jackson Co., Dead Indian Soda Spring, 21.v.1964, J. Schuh (1 ♀, WSU); Mt. Hood 25.vi.1935, ALM

(1 ♀, USNM); Naknek, AFB, 4.vi.1954, W.C.F. (1 ♂, WSU); Vernonia, 13.iv.1936, on willow, K. Gray, J. Schuh (3 ♂, WSU); White Branch Meadow, Three Sisters, Frog Camp, 5500', 19.vii.1927, H.A. Scullen (5 ♀, USNM). **Utah:** Garfield Co., 15 kmN Boulder, 20.vi.1994, JFM (1 ♀, CNC). **Washington:** Clallam Co., Olympic NF, Klohowsya Cpgd, 12.iv.1975, N.E. Woodley (1 ♂, USNM); Clallam Co., Olympic NF, Klohowsya Cpgd, 12.iv.1975, D.M. Jackson (1 ♂, BARC); Mt. Rainier NP, Lk Louise, 4500 ft, on willow, 16.vii.1983, J.A. Downes (2 ♀, CNC), ditto, Cayuse Pass, 4700 ft, on willow, 18.vii.1983, J.A. Downes (4 ♂, CNC); Olympia, 1.iv.1895 (1 ♀, USNM); Orcas Is., 29.iii.1989, AB (5 ♂, CNC); Pierce Co., Fort Lewis, 30.iii.1951, R. Schuster (2 ♂, USNM); Snoqualmie Pass, 29.vi.1924, ALM (1 ♀, USNM); Whatcom Co., 23 mi E Glacier, Austin Pass, 4600 ft, 18.vii.1978, N.L. Herman (1 ♀, AMNH); Westport, 20.iii.1932, J. Wilcox (1 ♂, WSU); Whatcom Co., Glacier, 25.v.1965, F. Schmid (1 ♂, CNC); Yakima Co., 10 mi E Chinook Pass summit, 4.vii.1977, N.E. Woodley (1 ♂, USNM), Pine Grass ridge, 25.v.1941, B. Brookman (1 ♀, CAS). **Wyoming:** Yellowstone, 28.vi.1983 (1 ♀, CNC).

Recognition. This species is distinguished by the clouding about the veins in females, multiserial acrostichals, general large body size, epandrium longer than wide, with long hypoproct process, phallus and postgonites.

Re-description. Wing length 4.2–4.5 mm. **Male.** Head subtriangular, black, with black setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with long, thin, proclinate setae. Postvertical and postocular setae rather long, thin, hair-like; additionally, occiput covered with numerous similar setae longer on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4.0 times longer than basal width, smoothly tapered; stylus very short, shorter than basal width of postpedicel, bristle-tipped, segment 9 about twice as long as wide, apical bristle nearly as long as segment 9. Proboscis long, projected obliquely; labium about as long as head height; palpus projected parallel to labrum, ca two-thirds length of labrum.

Thorax black (postpronotal lobe often yellowish posteriorly and postalar tubercle brownish yellow), with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, slightly matt, with broad black brown vittae down acr and dc setae [in specimens from Hokkaido scutum almost uniformly black brown], viewed anteriorly brown pollinose, with 3 darker broad vittae down acr and dc setae; anepisternum uniformly greyish brown pollinose. Proepisternum with several brown bristly hairs in lower and in upper part. Postpronotal lobe with several long, uniform bristly hairs. Mesonotal setae mostly not prominent, usually 3–4 npl (numerous additional long, fine setae), 3–4 prescutellar dc, 1 pal and scutellar setae somewhat stronger but their number and position greatly varying (except pal); mesonotum clothed almost uniformly with long hair-like setae; acr and dc setae multiserial, separated by narrow bare space, both extending to base of scutellum; scutellum with about 12–16 (greatly varying in number) or even more pairs of setae forming often (especially in larger specimens) additional rows.

Legs brownish (knees, extreme apex of femora and extreme base of tibiae usually brownish yellow to yellow). Coxae and trochanters with numerous long, hair-like setae. Fore and mid femora with long, numerous hair-like setae on posteroventral, posterior and dorsal faces; additionally, mid femur with similar setae anteriorly. Hind femur with long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae, with some longer dorsal setulae (especially in basal part). Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly brownish infusate (Fig. 3A), with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of R_1 ; anal lobe very prominent, acute. R_{2+3} straight in apical part; radial fork with base proximal to apex of R_{2+3} ; R_5 and M_1 divergent before wing-apex; cell d broad, longer than basal cells, hardly produced apically, truncate; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly concave; M_4 nearly as long as or somewhat shorter than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending just short of wing margin. Halter with brown knob and paler stem.

Abdomen narrowed proximad, covered with numerous, brown, long hair-like setae, postermarginal setae not prominent; tergites viewed dorsally subshining, finely greyish brown pollinose, viewed posteriorly densely greyish brown pollinose; sternites 1–4 largely shining leaving margins finely pollinose, sternites 5–8 wholly finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded and bifid apex; gonocoxal apodeme short and slender (Fig. 6E). Postgonite posterior to phallus, extended well beyond epandrium, parallel with phallus and bent nearly at right angles subapically; bent apical section paired with several pairs of long basal spine-like projections and toothed surface apically; apex rounded.

Epandrium not greatly inflated laterally; dorsal bridge very narrow; produced distally into slender subapical surstylus; apex of surstylus with finger-like projection medially. Phallus long and slender, arched well beyond cercus, bent nearly at right angles subapically; apical section gently sinuous; ejaculatory apodeme plate-like, rounded, slightly longer than gonocoxal apodeme; base of phallus produced posteriorly into slender lobe, strongly arched subapically forming slender bifid apex. Cercus tapered, more than half length of epandrium, finger-like and broad basally, apex rounded, extended well free from epandrium; hypoproct produced into pair of long, slender divergent lobes, slightly shorter than cercus.

Female. Head and thorax with shorter and stronger setation. Occiput densely brownish grey pollinose. Dichoptic, with equally small ommatidia. Gena slightly produced. Frons very broad, almost parallel-sided, with marginal setulae, largely shining or finely pollinose in different degrees (sometimes entirely). Anterior ocellars broadly laterocline, moderately long; posterior ocellars minute. Thorax with scutum viewed dorsally densely brownish grey pollinose, with 3 brownish vittae down acr and dc setae. Some mesonotal setae prominent, including 3 npl, 1 pal and 3–4 pairs of prescutellar dc, scutellum often with less numerous setae than in male. Legs with coxae brownish yellow at apex; femora and tibiae somewhat broader yellow at apex and at base, respectively; with short inconspicuous setation. Wing almost hyaline, brownish clouding along veins (Fig. 2A). Abdomen with tergites finely greyish pollinose, covered with short, brownish yellow to yellowish or even pale hair-like setae; tergites 6–8 shining. Cercus brownish, elongate, slender.

Distribution. This species is distributed across North America, extending as far south as northern New Mexico in the west and New England states in the east (Fig. 7). In the Palearctic Region, *I. macquarti* extends from Scandinavia to the Russian Far East and as far south as the Alps (Italy, Switzerland) and Mongolia (Fig. 12B).

Iteaphila napaea Melander

(Figs. 5B, 6F)

Iteaphila napaea Melander, 1946: 36. Type locality: Lake Waha, Idaho, USA.

Type material examined. **HOLOTYPE**, ♂ labelled: “Lake Waha,IDA/ 9 June 1918/ A.L.Melander”; “HOLOTYPE/ *Iteaphila/ napaea* Mel.”; ALMelander/ Collection/ 1961” (USNM). **PARATYPES: CANADA. British Columbia:** Kaslo, 10.v., R.P. Currie (1 ♀, USNM). **USA. Idaho:** same data as holotype (2 ♂, 2 ♀, USNM); ditto, 30.v.1924 (1 ♂, 2 ♀, USNM). **Washington:** Loon Lake, 16.v.1924, ALM (1 ♂, USNM); Mt. Rainier, Summerland, 24.vii.1924, ALM (1 ♀, USNM); Tacoma, cherry blossom, 27.v.1917 (14 ♀, USNM); Valleyford, 29.v.1911, ALM (1 ♂, USNM).

Additional material examined. **CANADA. British Columbia:** Bowser, 7.v.1955, J.R. McGillis (1 ♀, CNC); Chilliwack Lk Rd, 49°06'N 121°36'W, 800 m, 15.vi.2000, H. Goulet, Gillespie (1 ♂, CNC); Cowichan Lk, 19.vi.1964, J.A. Chapman (1 ♀, CNC); Diamond Head Trail, 3200', 1–3.viii.1953, GJS (1 ♂, 1 ♀, CNC); Duncan, 9.vi.1955, GES (1 ♀, CNC); 24 km E Enderby, 8–9.vi.1991, AB (4 ♀, CNC); 42 km NE Hope, 31.vii., 2.viii.1991, AB (2 ♂, 1 ♀, CNC); Lava Lk, 50 mi N Terrace, flowers of *Cornus stolonifera*, 8.vii.1960, JGC (1 ♂, CNC); Lemon Ck, 10.vii.1967, J.H. Shepard (1 ♀, UBCZ); Lisadale Lk, bog, nr. Terrace, 14.vi.1960, JGC (2 ♀, CNC); Mission City, 19.vi.1953, GJS (1 ♀, CNC); Muncho Lk PP, Alaska Hwy, ca 460, 29.vi.1978, PHA (1 ♀, USNM); Mt. Revelstoke, 6000', 25–31.vii.1952, GJS, G.P. Holland (2 ♂, 7 ♀, CNC); Mt. Revelstoke NP, Eva Lk trail, 6000', 6,7.viii.1952, GJS (3 ♂, 6 ♀, CNC); Mt. Revelstoke NP, Snowfield, Jade Pass, 7300', 3.viii.1952, GJS (2 ♀, CNC); Prince George, 9.vi.1959, G.G.E. Scudder (1 ♀, UBCZ); Remo, 7 mi SW Terrace, 13.vi.1960, JGC (1 ♂, CNC); Robson, 6.vi.1962, 4.vi.1965, 8–19.v.1968, 9,22.v., 14.vi.1969, 6.vi.1970, H.R. Foxlee (6 ♂, 12 ♀, UBCZ); 6 km E Salmon Arm, 30.iv.1992, AB (1 ♂, CNC); 39 km E Salmon Arm, 10.v.1992, AB (1 ♂, CNC); 24 km NE Sicamous, 19.v.1991, AB (2 ♂, 1 ♀, CNC); Mt. Thornhill nr Terrace, 3000–4000', 29.vii.1960, W.R. Richards (1 ♀, CNC); 6 mi E Terrace, 3.vi.1960, WWM (1 ♀, CNC); 32 mi SW Terrace, on flowers of *Heracleum lanatum*, 6,8.vi.1960, GES, CHM, R. Pilfrey (7 ♂, 10 ♀, CNC); 50 mi SW Terrace, 24.vi.1960, JGC (1 ♀, CNC); Vancouver, 7.v.1932, 30.v.1953, GJS (2 ♀, UBCZ); Vancouver, Point Grey, 1,16.v.1973, JRV (2 ♀, CNC). **Yukon:** Haines Jctn, Pine Ck, 25.vi.1981, CSG (2 ♀, UBCZ); Ross R, 13 mi NE, 8.vi.1981, CSG (1 ♀, UBCZ); Little Salmon R, 62°15'N 135°27'W, 28.vi.1985, E. Krebs & J.J. Robinson (2 ♀, UBCZ); Whitehorse, Alaska Hwy across Yukon R, 12.vi.1996, PHA, M.M. Arnaud (1 ♀, USNM). **USA. California:** Alpine Co., W Fk Carson R, Snowshoe Spring Cpgd, 6600', 19–20.vi.1971, PHA, M.M. Arnaud (4 ♂, 5 ♀, USNM); Barton Flat, 12.vi.1954, ALM (1 ♀, USNM); Marin Co., Mill Valley, Blithedale Ridge,

110 m, 2–4.iv.1966, PHA (1 ♂, USNM); Napa Co., Howell Mt., 2 mi NNE Angwin, 1300', 18.iv.1986, H.B. Leech (3 ♂, 2 ♀, CAS); Plumas Co., Lassen NF, N Fk Feather R, 28.v.1977, DDW (1 ♂, CAS); San Bernardino Co., Camp Angelus [N34.145 W 116.982], White Ceanothus, 22, 28.v., 2.vi.1947, ALM (54 ♂, 20 ♀, USNM); Seven Oaks, 27.iv.1955, ALM (1 ♀, USNM); Tuolumne Co., Pinecrest, 13.vii.1948, PHA (1 ♀, USNM); Yosemite, 25.v.1915, A.K. Fisher (1 ♀, USNM). **Colorado:** Longs Peak Tr, vii.1920, Cockerell (1 ♀, USNM). **Idaho:** Nez Perce Co., Zaza Rd., Lk Waha & Craig Mt., N46°11'58"W116°48'59", roadside flowers, 11.vi.2011, BJS (6 ♂, 6 ♀, CNC). **Oregon:** Josephine Co., Bolan Lk, pollen in gut, 16.vi.1988, J.A. Downes (1 ♂, 1 ♀, CNC); Klamath Co., 12 mi SE Keno, 6.v.1964, V. Miller, J. Schuh (3 ♂, WSU). **Washington:** Lk Cushman, 27.vi.1917, H.G. Dyar (1 ♀, USNM); Early Winters R.S., Okanogan NF, 30.v.1966, D.S. Horning (1 ♂, CAS); Whatcom Co., Glacier, 25.v.1965, F. Schmid (1 ♀, CNC); Glacier, 4.vi.1917, H.G. Dyar (1 ♀, USNM).

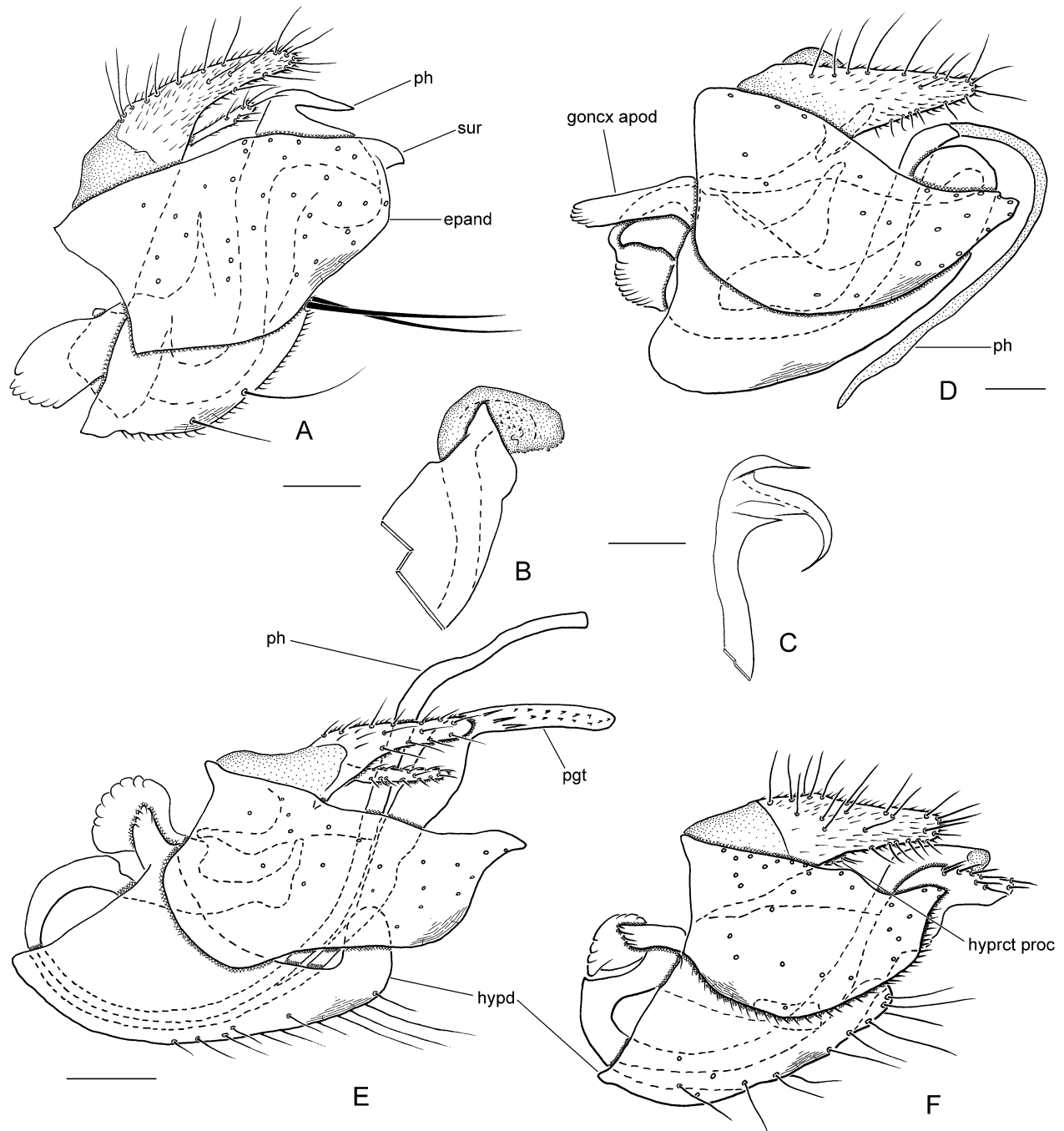


FIGURE 6. Male terminalia of *Iteaphila*, lateral view. **A.** *I. falcata* sp. nov.; **B.** *I. falcata* sp. nov., apex of postgonite; **C.** *I. falcata* sp. nov., apex of phallus; **D.** *I. furcata*; **E.** *I. macquartii*; **F.** *I. napaea*. Abbreviations: epand—epandrium; goncx apod—gonocoxal apodeme; hypd—hypandrium; hypct proc—hypoproct process; pgt—postgonite; ph—phallus; sur—surstylus. Scale bar = 0.1 mm.

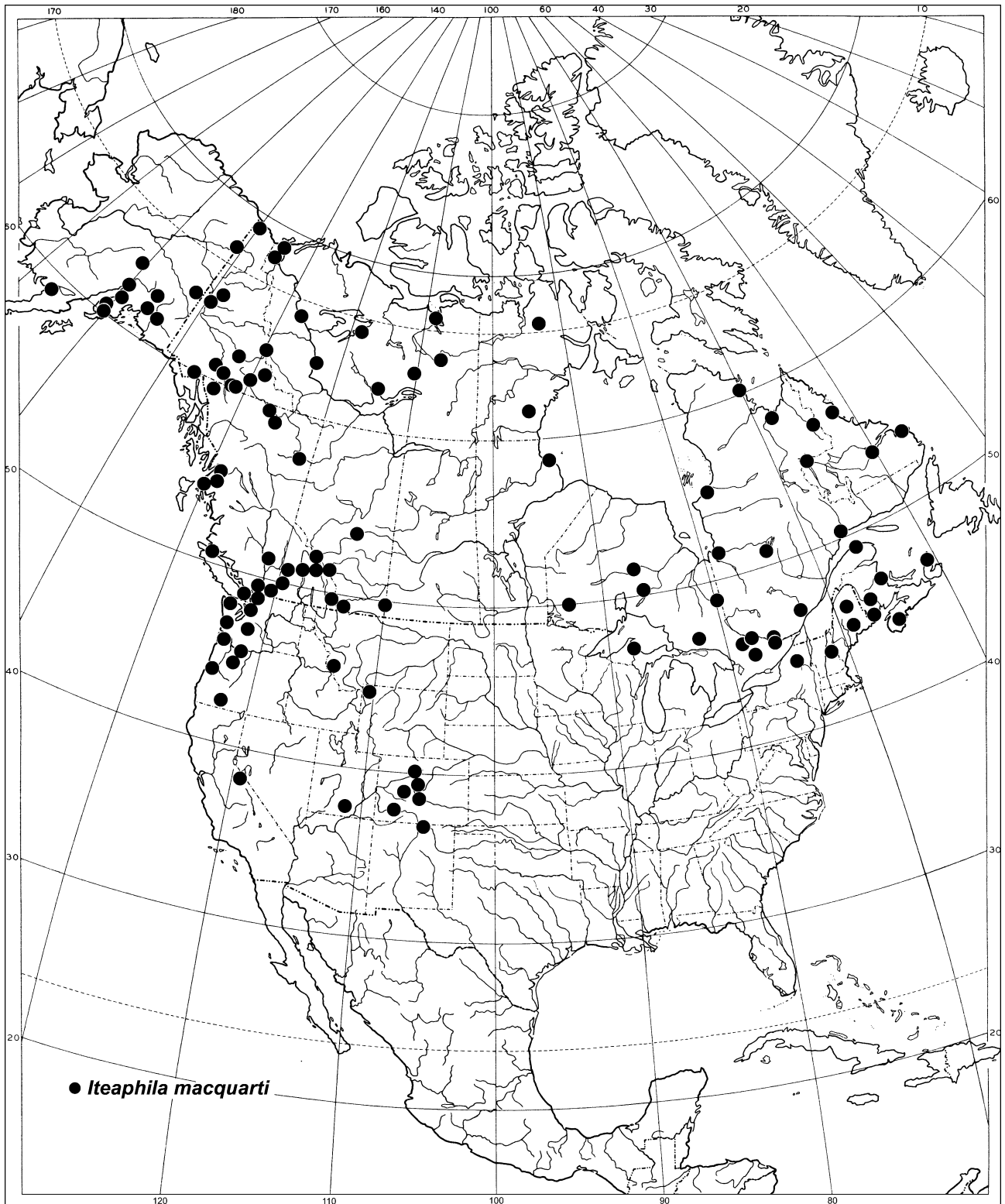


FIGURE 7. Distribution of *Iteaphila macquarti* in North America.

Recognition. This species is distinguished by four-serial acrostichals, with paired rows separate by length of the setulae, clear female wings and the male hypoproct lobes are very short.

Re-description. Wing length 2.7–3.5 mm. **Male.** Head subcircular, black, with black setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with long, thin, proclinate setae.

Postvertical and postocular setae rather long, thin, hair-like; additionally, occiput covered with numerous similar setae longer on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4.5 times longer than basal width, smoothly tapered; stylus very short, shorter than basal width of postpedicel, bristle-tipped, length of segment 9 about equal to width, apical bristle as long as segment 9. Proboscis long, projected obliquely; labium about as long as head height; palpus projected parallel to labrum, subequal to length of labrum.

Thorax black (postpronotal lobe often yellowish posteriorly and postalar ridge brownish yellow), with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, slightly matt, with broad black brown vittae down acr and dc setae; anepisternum uniformly greyish brown pollinose. Proepisternum with several brown bristly hairs in lower and in upper part. Postpronotal lobe with several short, fine setae. Mesonotal setae mostly not prominent, usually 2–3 npl, 3 prescutellar dc, 1 pal and sctl somewhat stronger but their number and position greatly varying (except pal); acr very short, 4-serial, in paired rows separated by length of setulae ending at prescutellar depression; dc short, slightly longer than acr, biserial anteriorly and uniserial posteriorly; 6–8 pairs of sctl in single row.

Legs light to dark brown (knees not paler). Coxae and trochanters with several short, fine setae. Fore and mid femora with rows of long, numerous hair-like setae on posteroventral, posterior and dorsal faces. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly brownish infuscate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} straight to arched beneath stigma; radial fork with base proximal to apex of R_{2+3} ; R_5 and M_1 divergent before wing-apex; cell d broad, longer than basal cells, slightly produced apically, truncate; m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M_4 subequal in length to dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending just short of wing margin. Halter with brown knob and paler stem.

Abdomen narrowed proximad, covered with numerous, brown, long hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally subshining finely greyish brown pollinose, viewed posteriorly densely greyish brown pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded and slightly notched apex; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended beyond epandrium, parallel with phallus and bent nearly at right angles subapically; bent apical section subequal to apex of phallus, paired with several pairs of long spine-like projections; apex rounded. Epandrium not greatly inflated laterally; dorsal bridge very narrow; produced distally into slender subapical surstylus; apex of surstylus slender, arched medially. Phallus long and slender, arched slightly beyond cercus, bent nearly at right angles subapically; apical section short and straight; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, longer than gonocoxal apodeme; base of phallus produced posteriorly into pair of widely separated lobes, nearly parallel to margin of hypandrium, slightly arched, apex rectangular and angular. Cercus tapered, slightly shorter than epandrium, finger-like and broad basally, apex rounded, extended well free from epandrium; hypoproct produced into pair of very short, divergent lobes, only projecting slightly free from cercus (Fig. 6F).

Female. Head and thorax with shorter setation. Occiput densely brownish grey pollinose. Dichoptic, with equally small ommatidia. Gena slightly produced. Frons very broad, almost parallel-sided, with marginal setulae, largely shining. Anterior ocellars broadly laterocline, moderately long; posterior ocellars minute. Thorax with scutum viewed dorsally densely grey pollinose, with 3 brownish vittae down acr and dc setae. Some mesonotal setae prominent, including 2–3 npl, 1 pal and 3–4 pairs of prescutellar dc; dc mostly uniserial. Legs yellowish to brown; setation of fore and mid femora inconspicuous. Wing almost hyaline. Abdomen pale yellow to brown, contrasting with dark thorax; apical tergites shiny; covered with short, pale brownish setae. Cercus brownish, elongate, slender.

Distribution. This species is confined to western North America, ranging from the Yukon Territory to southern California (Fig. 5B). Possible records from Alberta, Colorado, Nevada and Wyoming need to be verified with collection of male specimens.

Iteaphila nepalensis Shamshev sp. nov.

(Figs. 8A, 9)

Type material. **HOLOTYPE**, ♂ labelled: “27°58'N, 85°00'E./ Mal. tr. 1, 11,100'/ 16 May 1967/ Can. Nepal Exped.”; “HOLOTYPE/ *Iteaphila/ nepalensis/ Shamshev* [red label]” (CNC). **PARATYPES. NEPAL.** same coordinates as holotype, MT 2, 11,200', 17.v.1967, Can. Nepal Exped. (1 ♀, CNC); same co-ordinates as holotype, MT 2, 11,200', 21.v.1967, Can. Nepal Exped. (3 ♀, CNC); same co-ordinates as holotype, MT 3, 11,400', 31.v.1967, Can. Nepal Exped. (2 ♀, CNC); 28°00'N, 85°00'E, MT 6, 10,500', 20.v.1967, Can. Nepal Exped. (1 ♀, CNC); same coordinates as previous, MT 7, 9900', 20.v.1967, Can. Nepal Exped. (1 ♀, CNC); same coordinates as previous, MT 7, 9900', 26.v.1967, Can. Nepal Exped. (1 ♀, CNC).

Recognition. The species is distinguished by the long setae on the pedicel, especially in males and pale halteres in females.

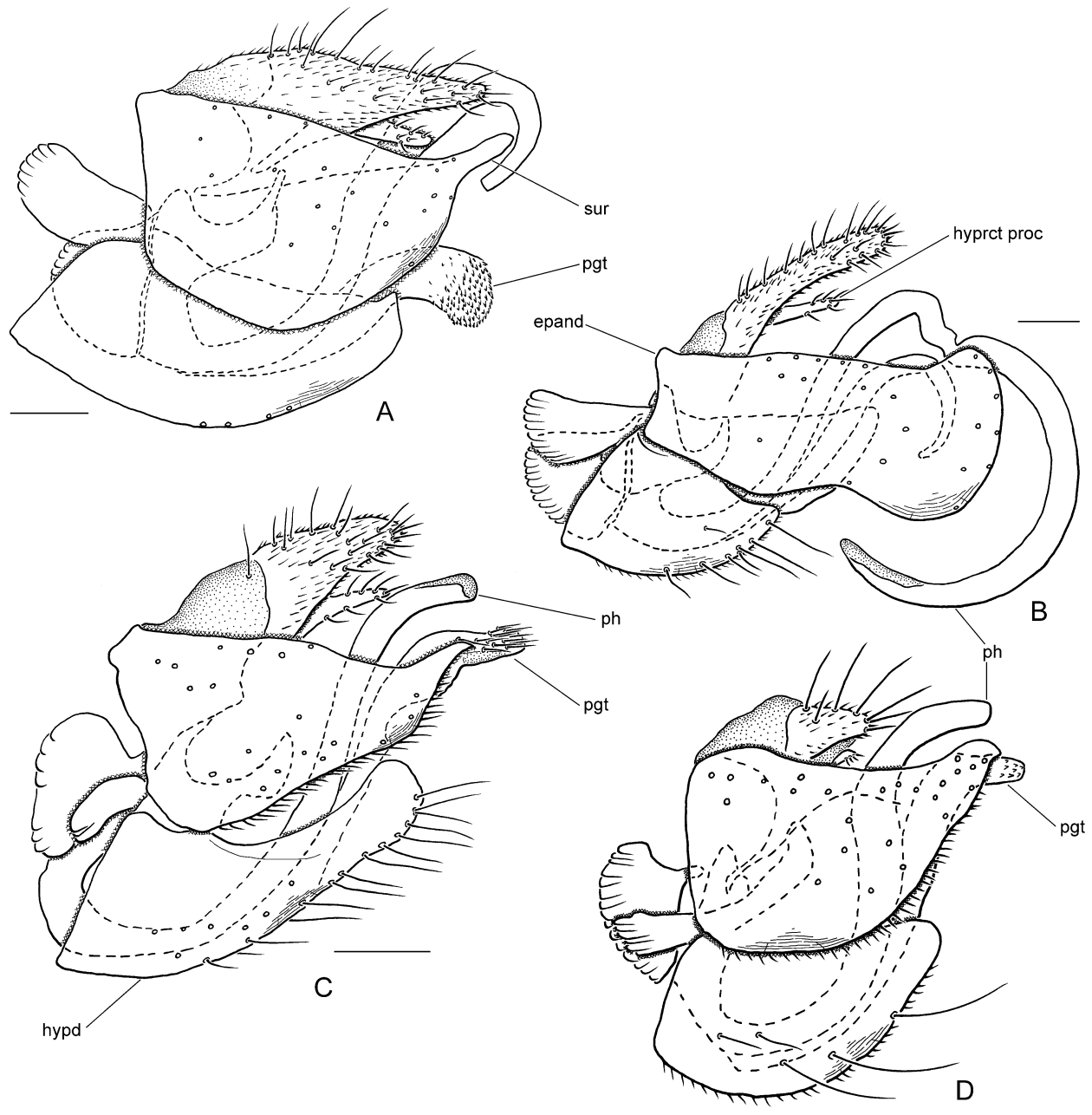


FIGURE 8. Male terminalia of *Iteaphila*, lateral view. **A.** *I. nepalensis* sp. nov.; **B.** *I. nitidula*; **C.** *I. orchestris*; **D.** *I. pumila* sp. nov. Abbreviations: epand—epandrium; hypd—hypandrium; hypcrt proc—hypoproct process; pgt—postgonite; ph—phallus; sur—surstylus. Scale bar = 0.1 mm.

Description. Wing length 3.0–3.4 mm. **Male.** Head black, with brown to black setation, occiput finely greyish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish pollinose. Ocellar triangle very prominent, with two pairs of setae; anterior ocellars long, thin, posterior ocellars short. Postvertical and postocular setae thin, very long; occiput covered with numerous similar shorter setae in lower part. Antenna brown; scape short, subequal to globular pedicel, both with long setae; postpedicel nearly 4.0 times longer than wide, rather narrow at base, smoothly tapered; stylus very short, bristle-tipped; segment 9 distinct, about as long as wide, apical bristle nearly as long as segment 9. Proboscis long, projected oblique; labium somewhat more than half height of head; palpus projected parallel to labrum, slightly shorter than labrum, with numerous long bristly hairs.

Thorax black in ground-colour, with black setation; scutum viewed dorsally matt brown, with indistinct darker vittae down acr and dc setae, viewed anteriorly velvety brown; pleura uniformly finely brownish grey pollinose. Proepisternum with several short, brownish hair-like setae in lower and upper parts. Postpronotal lobe with 1 very long, thin and several similar, short setae. Mesonotal bristles hair-like; acr long, arranged in 2 irregular rows, lacking on prescutellar depression; dc mostly multiserial and subequal in length to acr, some setae anteriorly and 2–3 prescutellar pairs longer; several long presut and similar psut spal, 4–5 very long npl (with several additional shorter setae), 1 long pal, about 8 pairs of sclt.

Legs wholly brownish. Coxae and trochanters with ordinary bristly hairs. Fore femur with long, hair-like setae (longer than femur is deep) on posteroventral, dorsal and posterior faces. Mid femur with similar pattern of setation but posteroventral setae slightly longer and stronger. Hind femur with long, thin anteroventral and dorsal setae. All tibiae with some longer posterodorsal setulae on basal part; additionally, hind tibia with similar anterodorsal setulae. Tarsomere 5 on all legs flattened; pulvilli broad, shorter than tarsal claw.

Wing finely brownish infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly deflected below stigma; radial fork V-shaped, with base opposite apex of R_{2+3} ; R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M_4 subequal to dm-cu crossvein. Apex of cell cua slightly round, CuP+CuA long, ending short of wing margin. Halter brown.

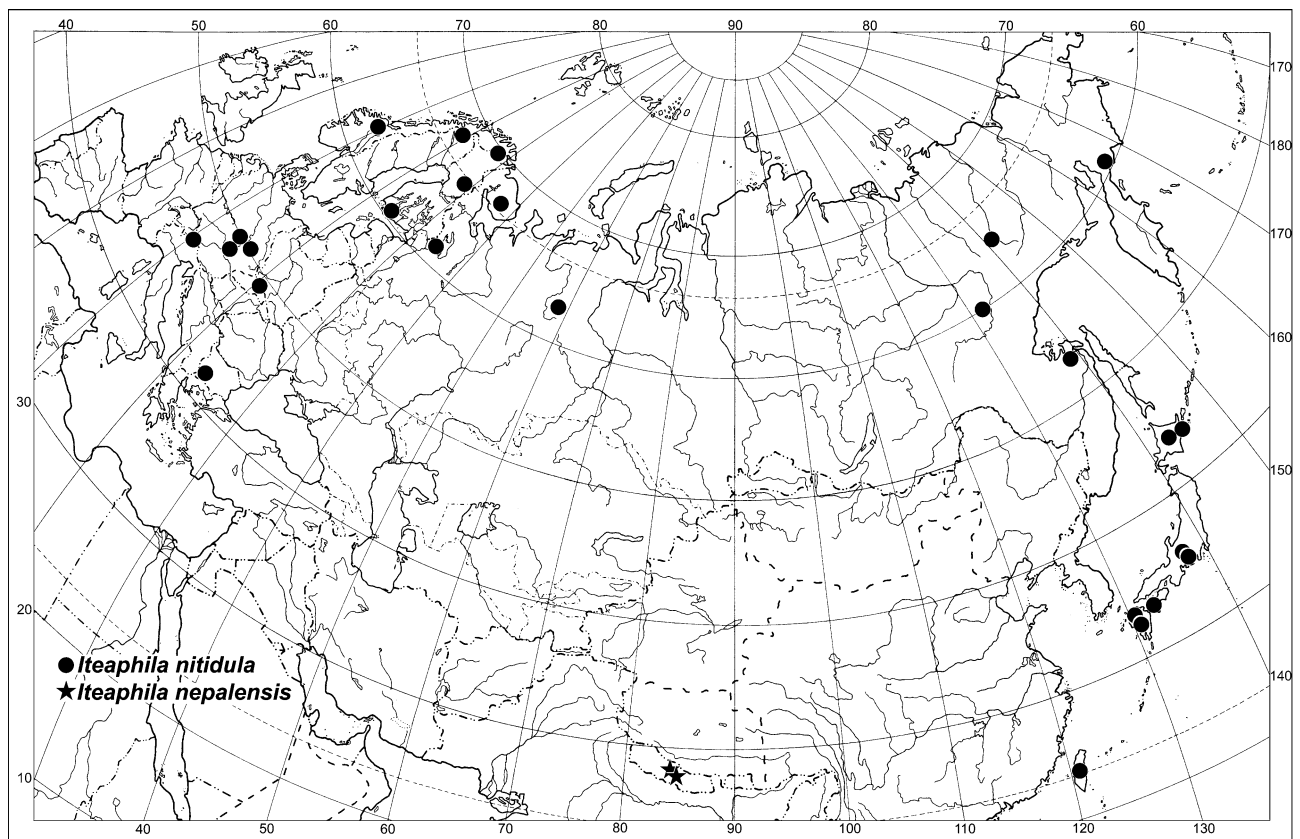


FIGURE 9. Distribution of *Iteaphila nitidula* and *I. nepalensis* sp. nov. in the Palearctic and Oriental regions.

Abdomen brownish, brown pollinose; covered with numerous long brownish bristly hairs. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broad truncate apex; gonocoxal apodeme broad and elongate. Postgonite posterior to phallus, extended slightly beyond epandrium, parallel with phallus and strongly arched subapically; bent apical section shorter than apex of phallus, paired with apex membranous, bearing roughened surface and teeth-like projections, apex broadly rounded. Epandrium quadrate, not greatly inflated laterally; dorsal bridge very narrow; apex of surstylus very slender, projecting posterodorsally. Phallus long and slender, arched beyond epandrium, strongly recurved subapically (Fig. 8A); apical section long; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, longer than gonocoxal apodeme; base of phallus produced posteriorly into recurved lobe with pair of slender lateral prolongations. Cercus tapered and slender, longer than half length of epandrium, finger-like and broad basally, apex narrow rounded, extended free from epandrium; hypoproct produced into pair of long, divergent lobes, projecting free from cercus.

Female. Head with shorter setation; occiput, ocellar triangle and frons finely brownish grey pollinose (degree of pollinosity varying and in some specimens frons more or less shining). Dichoptic, ommatidia equally small. Frons very broad, with marginal setulae. Palpus with short setae. Scutum viewed dorsally subshining, finely brownish grey pollinose; main mesonotal bristles stronger; scutellum with 4–5 pairs of setae. Legs, including coxae, almost wholly yellow, only hind femur in apical part dorsally, hind tibia near apex and tarsi brownish; with short, mostly inconspicuous setation (fore and mid femora with short, thin posteroventral subapical setae and hind femur with moderately long, thin anteroventral and dorsal setae). Halter pale. Abdomen brownish yellow, viewed dorsally subshining, finely greyish pollinose, with very short brownish setation. Cercus brownish, elongate.

Etymology. The specific name is named after the country of origin.

Distribution. This species is presently confined to Nepal (Fig. 9).

Remarks. All specimens of this species were collected during the Canadian Nepal Expedition.

Iteaphila nitidula Zetterstedt

(Figs. 1C, 3B, 8B, 9, 10)

Iteaphila nitidula Zetterstedt, 1838: 541. Type locality: Dalekarlia, Sweden [= Dalarna].

Hilara migrata Walker, 1849: 491. Type locality: St. Martin's Falls, Canada; Smith, 1971: 354.

Hilara obscura Meigen: Zetterstedt, 1849: 3018. Misidentification.

Hilara carbonella Zetterstedt, 1859: 5003. Type locality: Wittangi, Sweden [after lectotype designation]. **syn. nov.**

Steleocheta stiriensis Becker, 1891: 284. Type locality: Rolle-Pass [Italy].

Steleocheta meridionalis Becker, 1892: 126 (new name for *Steleocheta stiriensis* Becker, 1891). Unnecessary name change.

Empis conjuncta Coquillett, 1900: 411. Type locality: Alaska, USA. **syn. nov.**

Iteaphila fuscipennis Frey, 1913: 39 (as variation of *Iteaphila obscura* sensu Frey). Type locality: Lt. Kola [Russia: Murmansk Province]; Tuomikoski, 1958: 130.

Iteaphila styriensis: Melander, 1928: 104, error or emendation.

Iteaphila americana Melander, 1946: 32. Type locality: Yellowstone Park, USA; Tuomikoski, 1958: 130; Smith, 1971: 354.

Type material examined. *Iteaphila nitidula*: **HOLOTYPE** ♀, labelled: "Dlc. [= Dalekarlia]"; "Bhm. [= Boheman]"; "HOLOTYPE/ *Iteaphila/ nitidula/* Zetterstedt, 1838/ design. 2007 Shamshev & Sinclair [red; due to poor condition of pin, specimen was re-mounted]" (NHRS).

Hilara carbonella: **LECTOTYPE** ♂ (here designated), labelled: "*H. obscura* M.? / Wittangi. ♂ [white, Zetterstedt's handwriting]"; "Lectotypus/ *Hilara/ carbonella/* Z. 1859/ design. 2004/ I. Shamshev [red, handwritten]"; "Empididae, Type no. 3034: 1–2, Zool. Mus. Lund Sweden" (MZLU). **PARALECTOTYPE**: 1 ♂ from Finland (Wallengren Collection (292: 4), MZLU).

Steleocheta stiriensis: **HOLOTYPE** ♀, labelled: "Rolle-Pass/ 20|6.90, 25693"; "meridio-/nalis B. [Becker's hand writing]"; "? Typus"; "Zool. Mus. Berlin"; "Holotype [red]"; "*Iteaphila nitidula* Zetterstedt, 1838/ det. Shamshev & Sinclair, 2004 [wings and postpedicel on one antenna missing]" (ZMHB).

Iteaphila fuscipennis: **HOLOTYPE** ♂, labelled: "Kola/ Palmén/ 469 [pink]"; "HOLOTYPUS, *Iteaphila obscura* Zett. var. *fuscipennis* Frey, 1913: 39, ident. by Chvála, 1980" (ZMH).

Iteaphila americana: **HOLOTYPE** ♂, labelled: "YellstPark/ Thumb Sta/ 16 July [19]23/ ALMelander"; "HOLOTYPE/ *Iteaphila/ americana/* Mel."; "ALMelander/ Collection/ 1961" (USNM). **PARATYPES**:

CANADA. British Columbia: Vancouver, 13.v.1916 (2 ♀, USNM). **Quebec:** Aylmer, 23, 28.v.1923, C.H. Curran (1 ♂, 2 ♀, USNM). **USA. Colorado:** Monarch Pass, 8000 & 11400 ft., 21.vi.1940, ALM (2 ♀, USNM). **Idaho:** Lake Waha, 9.vi.1918, ALM (1 ♂, 3 ♀, USNM); Moscow Mt., 17.vi.1916, 26.vi.1920, ALM (1 ♂, 1 ♀, USNM). **Missouri:** Atherton, 13.iv.1901 (1 ♂, USNM). **Montana:** Glacier Park, Grinnell Lake, 24.vii.1935, ALM (1 ♀, USNM). **New Mexico:** Las Vegas Mts., 11,000 ft., vi.1901, Cockerell (USNM). **Oregon:** Mt. Hood, 5000 ft., 25.vi.1935, ALM (1 ♀, USNM). **Washington:** Deer Park, 5.v.1912 (3 ♀, USNM); Ilwaco, 25.v.1917, ALM (1 ♀, USNM); Mt. Baker, Skyline Trail, 10.viii.1925, ALM (1 ♀, USNM = *Anthepiscopus*); Mt. Rainier, Paradise, 28.vi.1935, ALM (2 ♂, USNM); Mt. Rainier, van Trump, 21.vii.1922, ALM (1 ♂, 1 ♀, USNM); Olympia, 24, 31.iii.1894 (2 ♂, USNM); Seattle, 17.iii.1896, 24.iii.1903, 9.iv.1899, 14.iv.1898, 15.iv.1898 (5 ♂, 1 ♀, USNM); Snoqualmie Pass, 29.vi.1924, ALM (1 ♀, USNM). **Wyoming:** same data as holotype (5 ♀, USNM).

Empis conjuncta: **LECTOTYPE** ♂ (here designated), labelled: “Sitka Alaska/ June 16 ’99”; “Harriman Expedition’99/ T.Kincaid,Collector”; “Type/ No. 5215/ U.S.N.M. [red label]”; “Empis/ conjuncta/ Coq. [Coquillett’s handwriting]”; “Iteaphila/ conjuncta/ Coq. [hand written]” (USNM). **PARALECTOTYPES:** same as lectotype (1 ♀, USNM); Orca, 27.vi.1899 (1 ♀, USNM).

Taxonomic notes. Zetterstedt (1838) described *I. nitidula* after a single specimen (female), which he received for identification from Boheman and which was taken from Dalekarlia (mountain area in middle Sweden). In Zetterstedt’s collection in Lund there is one specimen of this species (female), however, it is not the holotype because it was collected by Zetterstedt in Sweden Lapland. Probably when Zetterstedt described the new species, he returned the single specimen to Boheman in Stockholm, where among other specimens of *I. nitidula* there is a female with the same data as in Zetterstedt’s original description (Tuomikoski 1958). We examined all specimens of *I. nitidula* housed in Lund and Stockholm and added a holotype label to this female specimen. See Michelsen (1985) for discussion of Zetterstedt type depositories.

The authors of the last catalogues on Empididae (Chvála & Wagner 1989; Yang *et al.* 2007) indicated that *Hilara obscura* was described by Zetterstedt (1849) as a separate species. However, our comparison of Zetterstedt’s papers and his collections indicate that it is a misleading conclusion. Zetterstedt (1842: 359) described *Hilara minuta* (= *Ragas unica* Walker) and in the end of the description of this species he made a note that he has a male taken from “Wittangi Lapponiae Tornensis d. 14 Jun. 1821 inveni” that possibly is *Hilara obscura* Meigen. But because he had only one specimen in bad condition and had no female he did not discuss this species. However, Zetterstedt (1849: 3014 and 3018) included *H. obscura* under number 32 in his list of species of *Hilara* indicating Meigen as the author of the specific name. At the same time he noted a male from “Westrogothia valde rara, d. 6 Jun. a Prof. Boheman inventa” and did not note a specimen that he had indicated in 1842. In the Diptera Scandinavica Collection (Lund) at the end of material on the genus *Hilara* there is one specimen with the name *H. obscura* (“*H. obscura* M?, Wittangi, ♂”), which is the specimen noted by Zetterstedt in 1842. Thus, it is evident that Zetterstedt never described the species with the name *H. obscura*. An additional supporting argument is that Zetterstedt (1859: 5003) described *Hilara carbonella* (Diptera Scandinavica Collection, Lund; species No. 34 box with *Hilara*) and indicated that the specimen from “Wittangi” noted by him in 1842 belongs to this species together with other specimens taken from Finland (“Alterum specimen masculinum in Finlandia ad Enare d. 26 Jun. 1856 captum, bene conservatum, mecum communicatum D. Profess. E.J. Bonsdorff”). We examined both these specimens and designated a lectotype to clearly establish the identity of this species. Chvála (pers. comm. 2012) studied the types of *Hilara carbonella* at Lund in 1996 and identified it to be a species of *Iteaphila*, but mistakenly forgot to include this nomenclatural change in his book on *Hilara* of Fennoscandia (Chvála 2005).

It should be noted that Frey (1913) indicated mistakenly Zetterstedt as the author of *H. obscura*, transferred this “species” to the genus *Iteaphila* and provided a re-description. However, a figure of the male genitalia given by Frey (1913, fig. 3) indicates clearly that it is *I. nitidula* (see also Tuomikoski 1958).

Becker (1891) described *Steleocheta stiriensis* (= *S. meridionalis*) after a single specimen taken from Italy (Rolle-Pass). We added a red holotype label to fix formally the type status of this specimen. In addition, a determination label stating that this species is syntypic with *I. nitidula* was added.

Frey (1913) described *Iteaphila fuscipennis* as a variation of *I. obscura* Zetterstedt sensu Frey. We examined the holotype of this species and conclude with Tuomikoski (1958) that this species is a junior synonym of *I. nitidula*.

The synonym, *Empis conjuncta*, was designated in the unpublished thesis of Anderson (1973). We have examined the type series and confirm this conclusion.

Additional material examined. BULGARIA. Pirin, Banderica, 7.vii.1982, 1800 m, F. Kocourek (1 ♂, CHVC). **CANADA. Alberta:** Banff-Jasper Hwy, Sunwapta Pass, 6600', 5.vii.1955, R. Coyles (1 ♂, CNC); Banff NP, 14 mi W Banff, 4500', 7.vii.1955, on *Ledum groenlandicum* flowers, GES (1 ♂, 1 ♀, CNC); Banff NP, Mt. Eisenhower, 11, 16.v.1968, Mosquin & Seaborn (2 ♂, CNC); Dunvegan, N side Peace R, 22.v.-6.vi.1995, pan tp in grass, S. Boucher (1 ♂, CNC); Edmonton, 21.v.1925, O. Bryant (2 ♂, CAS); Edmonton, Ecol. Res., 29.vi.-5.vi.1986, B.V. Brown (3 ♂, 9 ♀, CNC); Elkwater, 11.vi.1956, O. Peck (2 ♀, CNC); Jasper, 3.vii.1932, E. Hearle (1 ♀, CNC); Kananaskis, For Exp. Sta. Seebe, 21.vi.1968, H.J. Teskey (1 ♀, CNC); Waterton Lks NP, Cameron Lk, 17.vi.1956, E.E. Stern (1 ♀, CNC); Ptarmigan Trail, 6500', 20.vii.1928, O. Bryant (1 ♀, CAS). **British Columbia:** Alaska Hwy, 37 km W Ft. Nelson, MT, 12.vi.-5.ix.1984, S & J Peck (1 ♀, CNC); Alaska Hwy, milepost DC520 mi (831 km), Whirpool Canyon, 9.vi.1996, PHA (2 ♂, 7 ♀, USNM); Alaska Hwy, mi 392, Summit Lk, 16.vi.-4.vii.1959, R.E. Leech (5 ♂, 27 ♀, CNC); Alliford Bay, QC Islands, 29.v.1957, E.E. MacDougall (2 ♀, CNC); Atlin, 2200', 13.vi.1955, H. Huckel (3 ♂, CNC); Bevan, 18.vi.1955, J.R. McGillis (1 ♀, CNC); Bowen Is, 24.iv.1960, GJS (1 ♂, UBCZ); Bowser, 5-7.vi.1955, J.R. McGillis (1 ♂, 8 ♀, CNC); Burnaby Mt., 26.iv.1979, D. Gillspie (2 ♀, CNC); Campbell R, Goslin Lk, 25.v.1988, G. Hutchings (1 ♂, RBCM); Cathedral PP, Glacier Lk, 7.vii.1986, R.A. Cannings (1 ♂, RBCM); Cathedral PP, Quiniscoe Lk, 7.vii.1986, S.G. Cannings (1 ♂, UBCZ); Circle Hot Springs, 24.vi.1996, PHA (1 ♀, USNM); Cottonwood R, Hwy 97, 23.v.1981, L. Vasington & S.G. Cannings (1 ♀, UBCZ); Devonian Regional Pk, 1.5 km S Metchosin, Sherwood Ck, 48°21.9'N 123°32.1'W, 9.iv.2004, C.J. Borkent (1 ♀, CNC); Duncan, 9.vi.1955, GES (1 ♀, CNC); Galiano Is, 28.iv.1974, 12.v.1980, G.G.E. Scudder (2 ♀, UBCZ); Hart Hwy, Bear Lk Camp, 72 km from Prince George, 24.vi.1978, PHA (1 ♂, USNM); Hixon, 21.vi.1976, E. Dyer (1 ♀, CNC); Horne Lk, 4.vi.1955, R. Coyles (1 ♀, CNC); Juskatla, QC Islands, 12-14.vi.1957, E.E. MacDougall (2 ♀, CNC); Kamloops, 11.vi.1939, 10.vi.1945, GJS (2 ♀, UBCZ); 4 km E Kingfisher, 50°36.92'N 118°40.801'W, flowers of *Shepherdia*, 11.iv.2010, AB (2 ♂, CNC); King Salmon Lk, 58°43', 132°54', 14.vii.1960, WWM (1 ♂, CNC); Kitimat, 2.vi.1960, JGC (2 ♀, CNC); Kitsumkalum Lk, 20 mi N Terrace, 31.v., 16.vi.1960, JGC, R. Pilfrey (2 ♀, CNC); Klanawa, 30.v.1952 (1 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Control/Burn 1-2, 2-9.vi., 3-17.vi., 17.vi.-2.vii., 25.vi.-9.vii., 2-16.vii.2000, MT, G. Gareau (3 ♂, 8 ♀, CNC); Lac la Hache, 27.vi.1964, L.H. McMullen (1 ♀, CNC); Lisadele Lk, 58°41', 133°04', 9.vii.1960, WWM (1 ♂, CNC); Manning Pk, Dry Ridge summit, 1830 m, 25.vi.1983, S.G. Cannings (1 ♂, UBCZ); Manning Pk, 1700 m, 27.vi.1984, R. Danielsson (1 ♂, MZLU); Moresby Is, Sandspit, 12 km W, 10.v.1984, G.G.E. Scudder (1 ♂, 10 ♀, UBCZ); Mt Revelstoke, 17.vii.1952, GJS (1 ♀, CNC); Pleasant Camp, 2.vi.1981, CSG (1 ♂, UBCZ); 4 mi S Prince George, Hwy 17, Southpark RV Pk, 2.vi.1996, PHA (2 ♀, USNM); Qualicum, 15.vi.1955, GES (1 ♀, CNC); Qualicum Bay, Horne Lk, 28.v.1955, J.R. McGillis (1 #, CNC); Queen Charlotte Islands, T'lell, 30.vi.1955, G. Holland (1 ♂, 1 ♀, CNC); QC Islands, T'lell, 25.v.1957, E.E. MacDougall (2 ♀, CNC); QC Islands, Alliford Bay, 29.v.1957, E.E. MacDougall (2 ♀, CNC); QC Islands, Laskeek Bay, Lost Is., 15.v.2001, N52°52'39"W131°31'07", S. Allombert (15 ♂, 12 ♀, RBCM); Robson, 25.v., 3.vi.1968, H.R. Foxlee (2 ♀, UBCZ); Salmon Arm, 2.v.1991, AB (2 ♂, 1 ♀, CNC); 3 km E Salmon Arm, 4.v.1992, AB (1 ♀, CNC); Salmon Arm, 16.iv.-26.v.1989, 2.v.1991, 1.v.1992, AB (3 ♂, 1 ♀, CNC); 6 km E Sicamous, 30.iv.1992, AB (1 ♂, CNC); 8 km E Sicamous, 8.vi.1992, AB (1 ♂, 3 ♀, CNC); nr Terrace, Lakelse Lk, 27.vi.1960, R. Pilfrey (1 ♀, CNC); nr Terrace, Mt. Thornhill, 21.vi.1960, GES (1 ♂, 1 ♀, CNC); 5 mi S Terrace, 3.vi.1960, JGC (3 ♀, CNC); 32 mi SW Terrace, ex. *Heracleum lanatum*, 4-11.vi.1969, GES, CHM, JGC, R. Pilfrey, B. Heming (6 ♂, 19 ♀, CNC); Tunjony Lk, 58°26', 132°45', 18-19.vii.1960, WWM, R. Pilfrey (3 #, CNC); Vancouver Is, Point Grey, 1.v., 9.iv.1973, JRV (2 ♀, CNC). **Labrador:** Goose Bay, 25.vi.1948, W.E. Beckel (1 ♀, CNC). **Manitoba:** Churchill, 20.vi.1948, GES (1 ♂, CNC); nr Churchill, burn S Twin Lks, 58°36.92'N 93°49.33'W, 11-15.vii.2009, MT 3, J.M. Cumming (2 ♂, 3 ♀, CNC). **New Brunswick:** Kouchibouguac NP, 25.v.1977, B. Cooper, Code 6133K (1 ♂, CNC); ditto, 8.vi.1977, JRV, Code 5222V (2 ♀, CNC). **Northwest Territories:** Aklavik, 16.vi.1931, O. Bryant (1 ♀, CAS); Norman Wells, 9.vi.1949, W.R.M. Mason (1 ♂, CNC). **Nova Scotia:** Cape Breton Highlands NP, MacKenzie Mtn, 400 m, 27.v.-8.vi.1984, BEC (6 ♂, 5 ♀, CNC); Cape Breton Highlands NP, Pleasant Bay, 7-11.vi.1984, BEC (2 ♂, 2 ♀, CNC); Cape Breton Highlands NP, North Mt., bog, 31.v.-3.vi.1984, BEC (6 ♂, 5 ♀, CNC); Cape Breton Highlands NP, Cheticamp R., 26-30.v.1984, BEC (3 ♀, CNC); Cape Breton Highlands NP, Beulach Ban Falls, 28.v.1984, BEC (1 ♀, CNC). **Ontario:** Algonquin PP, Swan Lake area, 13-15.v.1990, J.E. O'Hara (1 ♂, CNC); Bruce Co., Black Ck PP, 28.v.2000, *Potentilla anserina* flowers, J.J. Dombroskie (1 ♂, DEBU); Bruce Co., Crane R., 8.v.1997, SAM (1 ♂, DEBU); Fathom Five NP, Flowerpot Is., Marl Bed, Mossy Cedar, pan trp#2, 23.vi.-30.v.1995, T. Woodcock & SAM (1 ♂, DEBU); 7 mi E Griffith, 23.v.1988, 3.vi.1990, BEC (4 ♂, 1 ♀, CNC); Haldimond-Norfolk Co.,

Manestar Tr., 6 kmNNW St. Williams, 42°42'17"N 80°27'38"W, 8.v.2008, J.H. Kits (2 ♂, 1 ♀, DEBU); Low Bush, Lake Abitibi, 5.v.1925, N.K. Bigelow (1 ♀, CNC); Maynooth, 23.v.1970, J.F. McAlpine (1 ♀, CNC); Metcalfe, 10.v.1986, BEC (1 ♀, CNC); North Gower Rd 6 & Montague Boundary Rd, N45°02' W75°54', MT, 14–16.v.2004, A. Bennet & D. Barnes (1 ♀, CNC); Northumberland Co., Peter's Woods PNR, N44°7'26" W78°2'31", forest MT, 19.v.-1.vi.2011, Brunke & Paiero (1 ♀, DEBU); Ottawa, 29.v.1997, JRV (1 ♀, CNC); Ottawa, Rockcliffe Pk, 14.v.1987, BEC (1 ♀, CNC); Shaw Forest, 6 km NNE Eganville, MT, N45°38' W77°04', 27.v.-3.vi.1993, H. Goulet, M. Sharkey (1 ♀, CNC); Tobermory, Dunks Bay, 15.vi.1996, SAM (2 ♀, DEBU); Wellington Co., Fergus, MT, 1.vi.1992, SAM & Cannings (1 ♀, RBCM). **Quebec:** Gatineau Pk, Harrington Lk, 30.v.1954, J.E.H. Martin (1 ♀, CNC); Gatineau Park, King Mtn, summit 45°29'20"N 75°51'45"S, 13.v.2009, J.M. Cumming (1 ♂, 2 ♀, CNC); Kingsmere (Gatineau Pk), 12.v.1958, JGC (1 ♀, CNC); Mont St. Hilaire, 45°32.6'N 73°9.1'W, MT, 10–28.v.2001, E. Fast, S. Hawkins (5 ♂, 2 ♀, LEM); Old Chelsea (Gatineau Pk), 26.v.1964, JRV (1 ♀, CNC); St. Flore, Lac Mondor, 17.v.1951, E.G. Munroe (1 ♂, CNC). **Yukon:** Alaska Hwy, Slims R. delta along Sheep Ck Rd, km 1706, 60°59'N 138°34'W, MT, 10–12.vi.1979, #791020a, ROM Fld.Pty (1 ♀, ROM); Dempster Hwy, km 49, 4.vi.2003, AB (1 ♂, CNC); Dempster Hwy, mi 51, 17–21.vi., 25–27.vi.1973, G. Wood & DMW (14 ♂, 7 ♀, CNC); Dempster Hwy, km 68, N Klondike R, 64°29'N 138°25'W, 17.vi.1981, CSG (1 ♂, UBCZ); Dempster Hwy, km 155, pan tp, 28.vi.-2.vii.1982, G. Wood & DMW (1 ♀, CNC); Klondike Hwy, km 12, Ethel Lk Rd, sweeping roadside, 63°19'N 136°21'W, 30.vi.1980, #800067c, ROM Fld.Pty. (1 ♀, ROM); Klondike Loop, J 243 mi (390 km), McQueston, 14.vi.1996, PHA (3 ♀, USNM); North Fork Crossing, mi 43, Peel Plateau Rd., 3500', 26.vi.-5.vii.1962, R.E. Leech & PJS (7 ♀, CNC); Old Crow, 6 mi upriver Porcupine R, MT, 67°34'N 139°41'W, 4–5.vii.1981, #810537d, R. Jaagumagi (1 ♀, ROM); South Carol Rd., km 160 at Lapie Lks, sweeping, 61°37'N 133°04'W, 15.vi.1980, #800034d, ROM Fld.Pty (1 ♀, ROM). **CZECH REPUBLIC.** Beskydy Mts, Lysá hora hilltop, MT, 1323 m, 49°32'46"N 18°26'53"E, 21.v.-7.vii.2004, MB (1 ♂, 8 ♀, BARC); Bílina, Štrbický vrch, edge of wood, YPWT 50.33.10N 13.50.40E, 400 m, 23–30.iv.1997, MB (2 ♂, 1 ♀, BARC); Bílina, Vršiček, mixed wood, 440 m, 50°33'12"N 13°49'57"E, MT, 2.iv.-14.v.1998, MB (1 ♂, BARC); Bohemia, Klef Holubov-Křemže br., 23.v.1978, M. Chvála; *Stellaria* blossoms (1 ♂, CHVC); Bohemia, Lijmo-Luč, 6.v.1993, J. Máca (1 ♂, CHVC); Krkonoše, Liščí hora, MT, upper forest line, 1320 m, 50°42'04"N 15°40'35"E, 29.vi.-26.vii.2005, Vaněk (1 ♂, BARC); MS Beskydy, Muřinkový, peat-bog, 49.31N 18.39E, 950 m, 13.vi.1987, MB (2 ♀, BARC); Prachatice, Libínské Sedlo, 48.59N, 13.59E, 800 m, 9.v.1987, MB (1 ♂, BARC); Spálenec-Prachatice, car net, 21.v.1992, MB (1 ♂, BARC); Šumava Mts. 1100 m, Rokytecká slať, peat-bog, 49°00'59"N 13°25'05"E, PT, 18–20.v.1999, MB, Kubik (3 ♂, 1 ♀, BARC); Šumava Mts. 1100 m, Rokytecká slať, peat-bog, 49°00'59"N, 13°25'05"E, MT, 18.v.-16.vi.1999, MB, Kubik (1 ♂, 2 ♀, BARC); Šumava, Zhůřské slatě, peat-bog, 1140 m, 17.vi.-21.vii.1999, MT 49°04'30"N 13°33'54"E, MB, Kubik (1 ♀, BARC) Šumava Mts. 1130 m, Zhůřské slatě, peat-bog, 49°04'N 13°34'E, PT, 18–20.v.1999, MB, Kubik (1 ♂, BARC); Šumava, 870 m Nová Hůrka, peat-bog, 49°09'N 13°20'E, PT, 18–20.v.1999, MB, Kubik (1 ♀, BARC); Šumava Mts. 870 m Nová Hůrka, peat-bog, 49°09'N, 13°20'E, MT, 18.v.-16.vi.1999, MB, Kubik (1 ♀, BARC); MS Beskydy, H.Lomná—Hruška, small brook, Picetum, 43°30'29"N 18°36'56"E, 740 m, 23.v.-19.vi.1999, MT, MB (1 ♀, BARC); Šumava, Malá Niva, peat-bog, 750 m, MT, 29.iv.-16.vi.1999, 48°54'35"N 13°49'21"E, MB & Kubik (1 ♀, BARC); Šumava, Boubin, PT, 1250–1350 m, 48°59'27"N 13°49'01"E, vi.2004, J. Farkač (20 ♂, 10 ♀, BARC); Šumava Mts, Trojmezná, Malaise trap, 16.v.-1.vi.2003, J. Farkač (3 ♀, BARC); Šumava, Boubín, mixed wood, 990 m, MT, 48°58'40"N 13°49'00"E, 15–28.v.2002, 18.v.-12.vi.2002, K. Spitzer (2 ♂, 4 ♀, BARC); Šumava, Borová Lada, 2 km W, damp meadow nr. river, 49.00N 13.39E, 910 m, 4.vi.1996, MB (1 ♀, BARC); U. Janovice-Kostelec, car net, 8.v.1992, MB (1 ♀, BARC); Vraz u Pisku, mixed wood, 49.23N 14.08E, 400 m, 22–25.v.1995, MB (1 ♀, BARC). **FINLAND.** Fennia, Ab, Karislojo, Krogerus, 5.vii.1932 (ZMUC); Kuusamo, 1549, R. Frey (1 ♀, CHVC); Utsjoki, 7157, Hellén, 7157 (1 ♂, CHVC). **GERMANY.** Bayerischer Wald, Spiegelau, 3 km N loc. 1, 48.57N 13.22E, 760 m, 8.vi.1995, MB (8 ♂, 8 ♀, BARC; 2 ♀, CHVC); Wölfelsgrund, Schles. 16.v.1921, L. Duda, *Pseudoragas velutinus* (1 ♂, ZMHB); Wustung, b. Habelschweldt, 6.v.1927, L. Duda; *Pseudoragas velutinus* (2 ♀, ZMHB); same locality, 31.v.1923 (1 ♀, ZMHB). **JAPAN.** **Ehime:** Shikoku: Matsuyama, 4.iv.1957, M. Takahashi (1 ♂, KUMF). **Fukuoka:** Kôrasan, Kurume, 21.iii.2001, S. Ide (29 ♂, 8 ♀, KUMF); ditto, 26.iii.2004, S. Ide (5 ♂, 12 ♀, KUMF). **Hokkaido:** Upepesanke, alpine zone, 20.vii.1967, TS (2 ♂, 5 ♀, KUMF); Sugataminoike, Taisetsuzan, 24.vi.1986, TS (2 ♂, KUMF); Takagi-S. (1 ♂, KUMF); 28.v.1957, M. Takahashi (1 ♀, KUMF); Nibushi, Kutcharo, Kushiro, 8.vi.1957, M. Takahashi (1 ♀, KUMF). **Kumamoto:** Haki, Izumimura, 21.iv.1980, K. Ohara (2 ♂, KUMF). **Nagano:** Okushiga-gohgen, 31.v.1975 (1 ♂, 2 ♀, KUMF). **Yamanashi:** Gozeishi, Hoozan, 2.v.1961, TS (1 ♀, KUMF).

RUSSIA. Kamchatka: Karyak Autonomous Okrug, env. of Apuka, Pakhachinskiy Range, shrubby tundra, 200–300 m, 3.vii.1959, Gorodkov (4 ♂, ZIN). **Karelia:** Khumala & Polevoy, 2009. **Khabarovsk Territory:** Ozerpakh, estuary of Amur River [53°02'32"N, 141°14'45"E], 8–9.vi.1915, Chernavin (4 ♂, ZIN); same locality, 13.vi.1915, Chernavin (1 ♂, 3 ♀, ZIN); same locality, 15.iv.1915, Chernavin (10 ♂, 4 ♀, ZIN). **Magadan Prov.:** Indigirka R, mouth of Inyali river, border of larch forest near brook, 18.vi.1976, V. Kovalev (1 ♂, ZMMU). **Murmansk Prov.:** Vudyavr Lake, Khibiny, Kola Peninsula [67°37'50"N, 33°40'15"E], 28.vi.1930, E. Belyakova (1 ♀, ZIN). **Tyumen' Prov. (Khanty-Mansy Autonomous Okrug):** Khanty-Mansy AO, E Ural, 63.818°N 59.562°E, 622 asl, 6–8.vii.2010, K.Tomkovich (3 ♂, ZMMU). **Yakutia:** Mikhaylovka, 60 km NE of Amga, 17.vi.1986, Bagachanova (1 ♂, ZIN); Jakutskaja obl., Suntar-Chajata Mts. 900 m, vegetation, 26.vi.1988, Horák (1 ♀, BARC). **SLOVAKIA.** Malá Fatra, N slopes of Stoh 1300 m (3), 1.vi.1983, M. Chvála (2 ♂, CHVC); Vysoké Tatry, Hrebienok, 29.v.1968, M. Chvála (1 ♂, CHVC); Zadná Polana, 1250 m, spruce wood, MT, 6.v.-3.vii.2006, 48°39'40"N, 19°29'50"E, Ševčík & Roháček (1 ♂, 5 ♀, BARC). **SWEDEN.** Abisko, To., leg. O. Ringdahl (2 ♂, 1 ♀, MZLU); T. Lpm. Abisko, loc. 1. Abiskodalen, 7.vii.1957, P.I. Persson (2 ♀, MZLU); T. Lpm. Abisko, loc. 4. Nuoljatunneln, 13.vii.1957, P.I. Persson (1 ♀, MZLU); T. Lpm. Stordalem, loc. 2, 6.vii.1957, P.I. Persson (1 ♂, MZLU); Sm. Växjö, S Åreda, 29.iv.1989, R. Danielsson (1 ♀, CHVC; 29 ♂, 3 ♀, MZLU). **TAIWAN.** Tonpogoe, 2500 m, Kagi-Keu, 29.iii.1967, T. Shirozu (1 ♀, KUMF); vicinity of Taataka-anbu, ca 2700 m, Kagi-Keu, 3.iv.1967, T. Shirozu (1 ♂, KUMF); Tungpu-Taataka, Lulinshan, Nantou Hsien, 10.iv.1965, TS (2 ♂, KUMF); Tungpu-Taataka, Lulinshan, Nantou Hsien (1 ♀, KUMF). **USA. Alaska:** Anchorage, Chugach Mt, 2600', *Salix* catkin, 30.v.1948, Sailer & Sommerman (1 ♂, USNM); 173 mi NE Anchorage, Glenn Hwy, 27.v.1951, R.I. Sailer (1 ♀, USNM); 11 mi S Anderson Jct, Rte 3, mi 270, 23.vi.-11.viii.1984, MT, S&J Peck (1 ♀, CNC); Chena R Rec Area, 30 mi E Fairbanks, 22.vi.-12.viii.1984, MT, S&J Peck (1 ♂, 3 ♀, CNC); Douglas, 16.vi.1949, W.C.F. (1 ♀, USNM); Eagle Summit, 3800', 25.vi.1948, R.I. Sailer (1 ♀, USNM); Haines, 19.vii.1954, W.C.F. (1 ♀, WSU); Igloo Ck, 24.vi.1954, W.C.F. (1 ♀, WSU); Ketchikan, 3-28.vi.1954, 26.vii.1955, 11.vi.1956, F. Baker (1 ♂, 4 ♀, WSU); Mt. McKinley NP, Savage R, 790 m, 17.vii.1978, PHA (1 ♀, USNM); Naknek, AFB, 9.v.1954, W.C.F. (1 ♂, WSU); Nome Area, mi 17 Kougarak Rd, N64°42'22"W165°17'50", 21–23.vi.2005, J. & R. Skevington (2 ♀, CNC); Richardson Hwy, mi 206, beaver pond, 20.vi.1987, DMW (1 ♂, CNC); Richardson Hwy, mi 206, 2900', Isabel Pass, 13.vii.1962, PJS (1 ♀, CNC); Richardson Hwy, mi 213, 17.vi.1951, W.R.M. Mason & J.R. McGillis (2 ♀, CNC); Savage R, 19.vi.1954, W.C.F. (1 ♀, WSU); Sitka Nat. Mon., Baranof Is., 17.v.1954, R. Coleman (1 ♂, USNM); Taylor Hwy, Walker Fk Cpgd, 17.vi.1996, PHA (1 ♂, 2 ♀, USNM); Toklat R, 4.vii.1956, W.C.F. (1 ♂, 1 ♀, WSU); Unalakleet, 28.vi.1961, R. Madge (1 ♀, CNC). **California:** Alpine Co., West Fk Carson R, Snowshoe Springs Cpgd, 6600', 20.vi.1971, PHA (7 ♂, 5 ♀, USNM); Camp Angelus [Bernardino Co., N34.145 W116.982], 28.v.1947, ALM (1 ♀, USNM); Del Norte Co., Jediah Smith Redwoods SP, Howland Hill Rd at Mill Ck, 16.v.1978, DDW (2 ♂, 1 ♀, CAS); El Dorado Co., Echo Lk, 31.v.2009, 2285 m, N38°50'1.34" W120°2'34.79", BJS (3 ♂, 1 ♀, CNC); Fresno Co., Dinkey Ck area, Laurel Ck, 4.vi.1987 (1 ♀, CNC); Lassen Co., Westwood, 16.v.1945, W.W. Worth (2 ♂, 1 ♀, USNM); Mono Co., Tioga Pass, 9.vii.1969, ex. *Ribes montgenam*, A.R. Moldenke (1 ♀, CAS); Mono Co., Twin Lakes, 8600', SW Mono Lks, PHA (1 ♀, USNM); Nevada Co., Sagehen Ck, nr Hobart Mills, 17.vi.1964, C. Slobodchikoff (1 ♀, CAS); Placer Co., Tahoe NF, Ward Ck, 4.8 km SW Tahoe City, 2073 m, 17.vii.1982, T.W. Davies (1 ♀, CAS); Plumas Co., Lassen NF, N Fk Feather R, 28.v.1977, DDW (10 ♂, 11 ♀, CAS); Siskiyou Co., El Capitan, 2.viii.1971, 6000ft, J. Kraemer (1 ♀, CAS); San Mateo Co., Purisima Ck Canyon, 4.iv.1985, PHA (1 ♂, USNM); Sierra Co., Webber Lk, 3.vii.1964, C. Slobodchikoff (1 ♀, CAS); Shasta Co., Lassen NP, 6.vii.1952, M. Cazier, W. Gertsch, R. Schrammel (1 ♀, AMNH); Shasta Co., Vista Pl, 4 mi SW Burney Co, 3000–4000 m 14.v.1951, S.D. Gaimari (1 ♀, CNC); Tulare Co., 15 km E Pinehurst, 29.v.1995, D. Burdick (3 ♂, CNC); Tuolumne Co., Yosemite NP, Tuolumne Meadows, 2630 m, 37°52'46"N 119°21'30"W, 14.vi.2003, J. & A. Skevington (1 ♀, CNC). **Colorado:** Boulder Co., Corona Pass, 10600', 6.vii.1961, JGC (1 ♀, CNC); Echo Lk, Mt. Evans, 10600', 13.20.vii.1961, CHM (2 ♀, CNC); Mt. Evans, 11300', 10.viii.1961, CHM (1 ♀, CNC); Mt. Evans, Timberline, 11600', 11.29.vii.1961, CHM (6 ♀, CNC); Mt. Evans, Timberline, 11700', 22.vii.1961, CHM (1 ♀, CNC); Gilpin Co., 2 mi E Rollins Pass, 3048 m, 16.viii.1973, DDW (1 ♂, 2 ♀, CAS); Gunnison Co., Schofield, 3538 m, 39°2'29"N 107°2'54"W, 7.vii.2006, T.A. Wheeler (4 ♀, LEM); Lake Co., Independence Pass, 12100', 31.vii.1961, BHP (1 ♂, 1 ♀, CNC); Loveland Pass, 9850', 28.vii.1961, JGC (1 ♀, CNC). **Idaho:** Latah Co., 3 mi S Helmer, Meadow Ck, 2800', 20.v.1976, ex. *Lomatium orogenoides*, N.E. Woodley (1 ♂, 1 ♀, USNM); Latah Co., 3 mi S Helmer, Meadow Ck, 2800', 17.v.1975, ex. *Lomatium orogenoides*, W.J. Turner (2 ♂, 2 ♀, CHVC); Moscow Mt., 8.vi.1921, ALM (1 ♂, USNM); Moscow Mt., 3.vi.1911(2 ♀, USNM).

Michigan: Ontonogon Co., 18.vi.1960, R. & K. Dreisbach (1 ♀, CNC). **Montana:** Gallatin Co., Hyalite Dam, 20 mi S Bozeman, 6800', 12.vi.1999, R. Hurley (1 ♂, MTEC). **New Mexico:** Torrance Co., New Canyon Cpgd, 9 mi W Manzano, MT, 7800', 25.v.1991, J.E. O'Hara (1 ♀, CNC). **North Carolina:** GSMNP, ATBI Plot, Andrews Bald, 35°32'20"N 83°29'39"W, 10–24.v., 24.iv.–10.v.2001, MT, I.C. Stocks et al. (2 ♂, 1 ♀, CNC). **Oregon:** Baker Co., Anthony Lk, SP, 8.vii.1977, R.S. & V.L. Zack (1 ♂, WSU); Clackamas Co., Mt. Hood NF, Still Ck Cpgd, 23.vi.1977, DDW, (1 ♂, 1 ♀, CAS); Crater NP, 10.vii.1968, B.V. Peterson (1 ♂, 1 ♀, CNC); Hood R Co., Mt. Hood NF, Mitchell Ck nr Sahalie Falls, 1400 m, 27.vi.1978, DDW (1 ♂, 3 ♀, CAS); Hood R Co., 20 mi SSW Mt. Hood, Mt. Hood Meadow Ski Area, east Fk Hood R nr. Umbrella Falls, 5200', 7.vii.1978, N. Herman (2 ♂, 4 ♀, AMNH); Hood R Co., Mt. Hood NF, Hood R Meadows, 1350 m, 27.vi.1978, DDW (4 ♀, CAS); Josephine Co., Bolan Lk, ex. pollen in gut, 16.vi.1988, J.A. Downes (1 ♀, CNC); Lane Co., 1 mi S Hand Lk, 11.vii.1972, G. Steyskal (2 ♀, USNM); Lincoln Co., Boiler Bay, 24.v.1930, H.A. Scullen (2 ♀, USNM); Veronia, 1.iv.1938, ex. willow, J. Schuh, K. Gray (1 ♂, WSU). **Utah:** Garfield Co., 15 km N Boulder, 12, 20.vi.1994, JFM (5 ♀, CNC); Mt. Timpanogos Lodge, 1925 m, MT, N40°23'22.26" W111°35'8.13", 7–9.vi.2011, I. Winkler (3 ♀, USNM). **Virginia:** Fairfax Co., Dead Run, 16.iv.1915, ex. *Amelanchier canadensis*, R.C. Shannon (1 ♀, USNM). **Washington:** Clallam Co., Olympic NP, Sunrise Ridge, Mt. Angeles, 1550 m, 24.vii.1978, DDW (1 ♀, CAS); Lewis Co., Big Ck Cpgd, 4.4 km SE Ashford, 2.vii.1974, 550 m, PHA (1 ♀, CAS); Mt. Rainier, Paradise Pk, viii.1917, viii.1921, ALM (5 ♀, USNM); Mt. Rainier, Sluisin, 28.vii.1922, ALM (1 ♀, USNM); Mt. Rainier NP, E end Yakima Pk, creek, 1830 m, 3.viii.1977, DDW (1 ♀, CAS); Nahcotta, 24.v.1917, ALM (1 ♀, USNM); Pierce Co., Fort Lewis, 15.iv.1945, PHA (1 ♀, USNM); Pierce Co., Mt. Rainier NP, 14 km ENE Paradise, Owyhigh Tr, 46°45'44"N 121°39'26"W, 16.vi.2004, C.J. Borkent (1 ♀, LEM); Skagit Co., 32 km SE Marblemount Summit, North Cascades NP, MT, 18–20.vi.1987, B.V. Brown (2 ♀, CNC); South Bend, 23.v.1917, ALM (1 ♀, USNM); Whatcom Co., Glacier, 25.v.1965, F. Schmid (1 ♂, CNC); Yakima Co., 5 mi SE Tieton RS nr Rimrock Ck, 23–24.vi.1974, W.J. Turner (1 ♀, WSU). **Wyoming:** Centennial, Snowy Ra, 10000', 9.viii.1950, R.R.D. & R.K. Schwab (1 ♀, CNC); Dunraven Pass, 26.vii.1956, ALM (1 ♀, USNM); Sierra Madre Ra, Battle L. Rd., 8500', 18.vii.1961, BHP (1 ♀, CNC); Teton Co., Togwotee Pass, 17.vii.1961, BHP (1 ♀, CNC).

Recognition. This species is distinguished by shiny spots on the anepisternum and katepisternum, biserial acrostichal setulae, elongate and apically expanded epandrium and coiled phallus.

Re-description. Wing length 2.6–4.2 mm. **Male.** Head subtriangular, black, with black setation; occiput greyish brown pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish pollinose. Ocellar triangle very prominent, with 2 pairs of proclinate setae; anterior ocellars moderately long, posterior ocellars minute. Postvertical and postocular setae moderately long, thin; additionally, occiput covered with numerous similar setae longer in lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4.0 times longer than basal width, rather narrow basally, smoothly tapered; stylus very short, bristle-tipped, segment 9 shorter than wide, apical bristle somewhat longer than segment 9. Proboscis long, projected obliquely; labium about half as long as head is high; palpus projected parallel to labrum, nearly as long as labrum.

Thorax black, with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally dull black brown (often rather subshining), viewed anteriorly velvety brown, with 2 indistinct paler vitae between acr and dc setae; katepisternum and anepisternum with large shining patch in middle; otherwise finely brownish grey pollinose (sometimes entirely finely pollinose; e.g. in some specimens taken from Khabarovsk Territory of Russia). Proepisternum with several brownish short bristly setae in lower and upper parts. Postpronotal lobe with 1–2 (usually 1) long and several short setae. Mesonotal setae prominent; acr short, arranged in 2 irregular, close rows (sometimes 3–4–serial anteriorly), broadly separated from dc, lacking on prescutellar depression; dc multiserial anteriorly, becoming uniserial towards scutellum, mostly subequal in length to acr, 2–3 prescutellar pairs longer; 1–2 presut spal (sometimes with additional setulae), 3–5 npl (usually with additional thinner setae of different lengths), 2–3 psut spal, 1 long pal and 5–9 (more often 6, but sometimes with additional short setae) pairs of scl.

Legs almost entirely brownish, knees usually brownish yellow to yellow. Coxae and trochanters with numerous long bristly hairs. Fore femur with short, thin posteroventral setae longer subapically and with similar setae on dorsal and posterior faces. Mid femur with similar pattern of setation but posteroventral setae strong, spine-like on about apical half. Hind femur with moderately long, thin anteroventral and dorsal setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly brownish infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} straight in apical part; radial fork with base proximal to apex of R_{2+3} (R_4 sometimes absent); R_5 and M_1 divergent before wing-apex; cell d broad, longer than basal cells, hardly produced apically, truncate; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly concave; M_4 somewhat shorter than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending just short of wing margin. Halter brown.

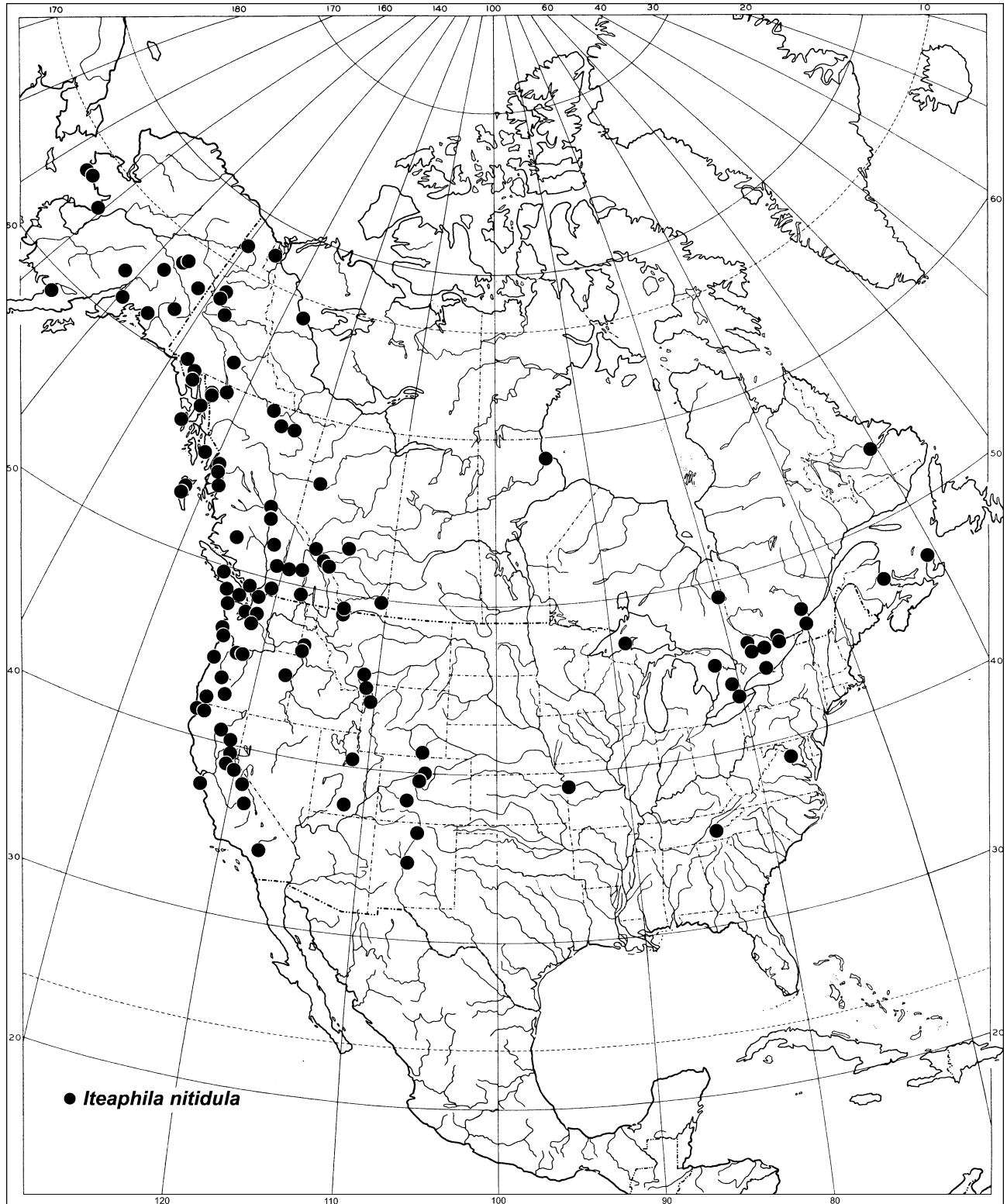


FIGURE 10. Distribution of *Iteaphila nitidula* in North America.

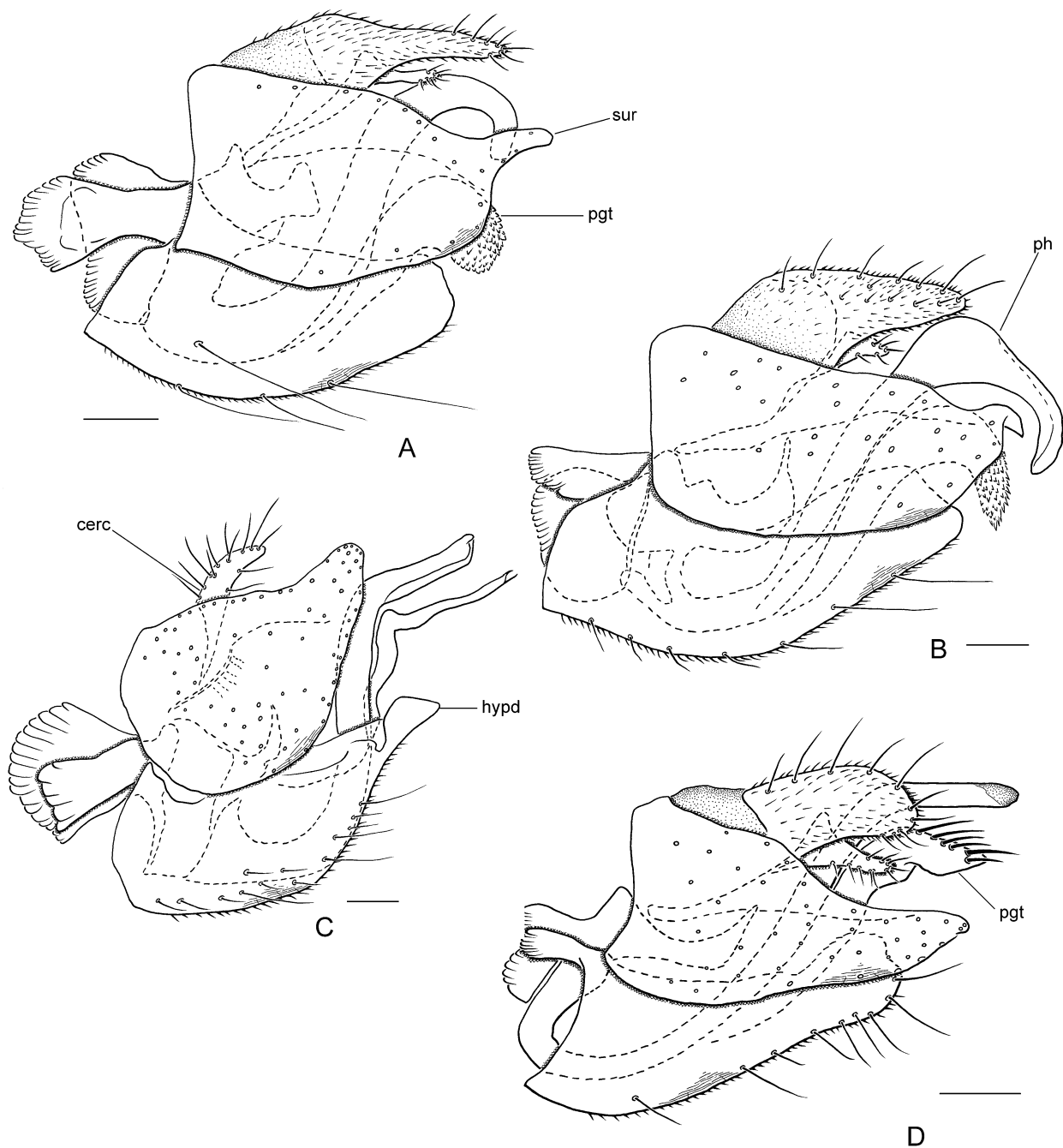


FIGURE 11. Male terminalia of *Itaphila*, lateral view. **A.** *I. rasnitsyni* **sp. nov.**; **B.** *I. saigusai* **sp. nov.**; **C.** *I. sicamous* **sp. nov.**; **D.** *I. taiwanensis* **sp. nov.** Abbreviations: cerc—cercus; hypd—hypandrium; pgt—postgonite; ph—phallus; sur—surstylus. Scale bar = 0.1 mm.

Abdomen brown, shining, covered with short, black, thin setae. Terminalia concolorous with abdomen, elongate. Hypandrium rounded, upcurved apically and extending into long, broad prolongation, with apical grooves supporting postgonites; gonocoxal apodeme broad and longer than ejaculatory apodeme. Postgonite posterior to phallus, extended well beyond hypandrium, parallel with phallus; apex sickle-shaped, roundly curved, mostly membranous. Epandrium (see Cumming *et al.* 1995, fig. 8) not greatly inflated laterally; dorsal bridge very narrow; elongate produced horizontally, apical half somewhat expanded, with apical margin broadly rounded; inner apical face expanded medially into ear-like surstylus; dorsal margin of inner apex with dark, knob-like projection obliquely (Fig. 8B). Phallus long and slender, arched well beyond epandrium, with membranous subdivision at mid-length; apical half rounded, sickle-shaped arching beyond apex of epandrium; ejaculatory apodeme plate-like, rounded, slightly shorter than gonocoxal apodeme; dorsal margin of base of phallus produced posteriorly into

slender lobe, strongly arched subapically forming slender trifid apex. Cercus long and slender, longer than half length of epandrium, projecting well beyond dorsal margin of epandrium; parallel-sided in lateral view with rounded apex, similar to lobes of hypoproct (see Cumming *et al.* 1995, fig. 8); hypoproct produced into pair of long, slender divergent lobes, half as long as length of cercus.

Female. Dichoptic, with equally small ommatidia. Frons very broad, widened toward ocellar tubercle, usually entirely shining (ocellar triangle pollinose), with short marginal setulae. Occiput with somewhat stronger postvertical and postocular setae and shorter bristly hairs in lower part. Scutum viewed dorsally subshining, finely brownish grey pollinose; presutural supra-alar and notopleural faces sometimes with shining patch. Scutellum with 3–5 pairs of setae. Legs greatly vary in colour; sometimes as in male or considerably paler, largely yellow (including coxae), or only extreme apex of femora yellow with tibiae and tarsi brownish to brownish yellow, sometimes tibiae and tarsi also yellowish basally. Fore and mid femora with short, thin posteroventral setae slightly longer subapically. Wing usually paler than in male. Abdomen brownish, viewed dorsally shining or subshining, with short, thin, brownish setae. Cercus elongate, concolorous with abdomen.

Distribution. This species is distributed across North America, extending as far south as New Mexico in the west and Smoky Mountains National Park in the east (Fig. 10). In the Palearctic and Oriental regions, *I. nitidula* extends from Scandinavia to the Russian Far East and as far south as Bulgaria and Taiwan (Fig. 9).

Remarks. In the Banff National Park region of Alberta (Canada), *I. nitidula* was collected on Labrador tea (*Rhododendron groeniodicum* (Oeder) Kron & Judd), an evergreen shrub growing in moist to wet conditions. Melander (1946) reported *I. nitidula* was collected also on mountain ash. This species was also reported from the brown coal basin in Northwest Bohemia (Czech Republic), considered the most anthropogenically damaged region in central Europe (Chvála & Barták 2000).

***Iteaphila orchestris* Melander**

(Figs. 8C, 12B, 14A)

Iteaphila orchestris Melander, 1902: 354. Type locality: Las Vegas Range, New Mexico, USA.

Type material examined. **LECTOTYPE** (here designated), ♂ labelled: “Las Vegas Rg./ VI.28.[19]02. N.M. [New Mexico]”; “COTYPE/ Iteaphila/ orchestris/ Mel. [red label]”; “ALMelander/ Collection/ 1961”; “LECTOTYPE/ Iteaphila/ orchestris Mel./ des. B.J. Sinclair 2011” (USNM). **PARALECTOTYPES: USA. New Mexico:** same data as lectotype (4 ♂, 9 ♀, USNM; 1 ♂, 3 ♀, ANSP).

Taxonomic notes. The syntype series was based on “numerous specimens” collected near the top of the Las Vegas Range, New Mexico, at an altitude of 11,000 feet. A dissected male syntype in poor condition bears an unpublished lectotype label. Due to its condition an alternative male was chosen and labelled as lectotype. The designation of the lectotype clearly establishes the identity of this species.

Additional material examined. **CANADA. Alberta:** Banff, 1916, N.B. Sanson (1 ♂, USNM); Banff, 11.vi.1922, C.B.D. Garrett (1 ♀, CNC); Banff, 20.v.1924, E. Hearle (1 ♀, CNC); Banff, Sulphur Mt., choke cherry, 24.vi.1925, O. Bryant (1 ♂, CAS); Banff, Eisenhr. Lookout, 4600', 7.vii.1962, K.C. Herrmann (1 ♂, CNC); Banff NP, Bow Pass, 17.vii.1955, R. Coyles (5 ♂, 14 ♀, CNC); Banff NP, 14 mi W Banff, 4500', flowers of *Ledum groenlandicum*, 7.vii.1955, GES (11 ♂, 11 ♀, CNC); Banff NP, Peyto Lookout, 8000', 23.vii.1962, K.C. Hermann (1 ♀, CNC); Banff NP, Victoria Glacier, 18.vii.1955, R. Coyles (1 ♀, CNC); Columbia Ice Field, 22.vii.1939, E.H. Strickland (1 ♀, USNM); Edmonton, U of A Ecol. Res., MT, 5–12.vi.1986, B.V. Brown (1 ♀, CNC); Jasper NP, 100 km S Jasper, 28.vi.1989, BJS (1 ♂, CNC); Lk Louise, 29.vii.1935, ALM (1 ♀, USNM); Ptarmigan Trail, 6500', 20.vii.1928, O. Bryant (2 ♀, CAS); Waterton Lakes NP, Cameron Lk, 18.vi.1955, O. Peck (2 ♂, CNC). **British Columbia:** Alaska Hwy, milepost DC520 mi (831 km), Whirlpool Canyon, 9.vi.1996, PHA (1 ♂, 2 ♀, USNM); Ashcroft, Cornwall Hills, 12.vii.1989, R.A. Cannings, CSG (1 ♂, 9 ♀, RBCM); Atlin, 2200', 21–25.vi., 3.vii.1955, B.A. Gibbard, H.J. Huckel (4 ♂, 38 ♀, CNC); Cathedral PP, Glacier Lk, 7.vii.1986, R.A. Cannings (1 ♂, RBCM); Clinton, 19.vi.1938, G.S. Walley (2 ♂, CNC); Duffey Lk, Blowdown Ck, base of Gott Peak, 20.vii.1988, CSG (3 ♀, RBCM); Emerald Lk, 30.vii.1935, ALM (1 ♀, USNM); Falkland, Arthur Lk, 24.vii.1988, CSG (1 ♀, RBCM); 6 km NE Falkland, 12–13.vii.1989, AB (1 ♀, CNC); Glacier NP, 1250 m, 30.vi.1989, BJS (1 ♂, CNC); Hat Ck, Finney Ck, sage flat, 13.vii.1989, R.A. Cannings, CSG (1 ♀, RBCM); Hedley, Nickel Plate, 5000', 13.vii.1953, J.R. McGillis (1 ♂, CNC); 29 km SE Hope, 14.vii.1994, AB (1 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Control

1, MT, 2-16.vii.2000, G. Gareau (1 ♂, 1 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Control 2, MT, 3.vi.-2.vii.2000, G. Gareau (36 ♂, 10 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 1, MT, 2-9.vi., 25.vi.-9.vii.2000, G. Gareau (5 ♂, 4 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 2, MT, 2.vi.-23.vii.2000, G. Gareau (4 ♂, 4 ♀, CNC); Lac Le Jeune, 25.vi.1973, H.J. Teskey (1 ♂, CNC); Lakelse, nr. Terrace, 30.v., 14.vi.1960, JGC, GES (2 ♀, CNC); Manning Pk, 29.vi.1973, H.J. Teskey (1 ♂, CNC); Manning Pk, Dry Ridge summit, 1830 m, 25.vi.1983, S.G. Cannings (1 ♂, UBCZ); Manning Pk, 1700 m, 27.vi.1984, R. Danielsson (1 ♂, 10 ♀, MZLU); Mt. Revelstoke, 5800-6000', 25-27.vii., 17.viii.1955, GJS, G.P. Holland (1 ♂, 8 ♀, CNC); Pleasant Camp, 2.vi.1981, CSG (2 ♂, 1 ♀, UBCZ); Robson, 22.vi.1957, 20.vi.1966, H.R. Foxlee (2 ♂, UBCZ); 4 mi S Prince George, Hwy 97, Southpark RV Pk, 2.vi.1996, PHA (1 ♀, USNM); Quesnel, 6.vi.1948, GJS (2 ♂, UBCZ); Summit Lk, mi 392 Alaska Hwy, 15.vi.-27.vii.1959, E.E. MacDougall, R.E. Leach (2 ♂, 3 ♀, CNC); 3 mi NE Telegraph Ck., 1.vii.1960, R.J. Pilfrey (2 ♀, CNC); 5 mi S Terrace, 3.vi.1960, JGC (1 ♀, CNC); 20 mi N Terrace, Kitsumkalum Lk, 31.v.1960, JGC, GES, WWM (12 ♂, 12 ♀, CNC); 32 mi SW Terrace, 4-6.vi.1960, GES (3 ♀, CNC); Yoho NP, Boulder EMAN 2, 51°22'17"N 116°31'15"W, MT, 11-18.viii.1999 (1 ♀, CNC). **Yukon Territory:** Alaska Hwy DC - 777, Morley R Territorial Cpgd, 1.vii.1978, PHA (1 ♂, USNM); Alaska Hwy, km 1666, 0.25 mi W Jarvis Rd, 60°56'N 137°53'W, 7.vi.1979, ROM Fld Pty (1 ♂, ROM); Alaska Hwy, km 1706, Slims R delta, 60°59'N 138°34'W, 8.vi.1979, ROM Fld Pty (1 ♂, ROM); Alaska Hwy, km 1706, Sheep Ck Rd, 60°59'N 138°34'W, 10.vi.1979, ROM Fld Pty (1 ♂, ROM); 1 km N Carcross, Carcross Dunes, PT behind dunes, 30.vi.-5.vii.1997, T.A. Wheeler (1 ♀, LEM); Destruction Bay, 10 kmS, 8.vii.1985, E. Krebs & J.J. Robinson (2 ♂, UBSZ); Klondike Hwy km 12, Ethel Lk Rd, 63°19'N 136°21'W, 30.vi.1980, ROM Fld Pty (4 ♀, ROM); Klondike Loop, J 243 mi (390 km), McQuesten, 14.vi.1996, PHA (7 ♂, 3 ♀, USNM); Kluane NP, Sheep Mt., 2.vi.1979, S.G. Cannings (1 ♀, UBCZ); Lapie R, 1 kmE Campbell Hwy, 61°59'N 132°35'W, 7.vi.1981, CSG (3 ♂, 1 ♀, UBCZ); Lewes Ck, 60°21'N 134°46'W, 27.vi.1981, CSG (3 ♂, UBCZ); Little Atlin, 15.vii.1948, E. Krebs & J.J. Robinson (2 ♀, UBCZ); Lone Tree Ck, 60°17'N 132°85'W, CSG (1 ♀, UBCZ); Nine Ck, 2 km W, N Canol Rd, 62°23'N 139°42'W, 11.vi.1981, CSG (1 ♀, UBCZ); Pine Ck, Haines Jctn, 25.vi.1981, CSG (1 ♂, UBCZ); Ross R, 61°56'N 132°30'W, 20-21.vi.1960, E.W. Rockburne (2 ♀, CNC); Ross R, 13 mi NE, 8.vi.1981, CSG (1 ♀, UBCZ); Swim Lks, 62°13'N 133°W, 3200', 15-17.vi.1960, J.E.H. Martin (1 ♂, 1 ♀, CNC); Telegraph Ck, 21.vi.1985, E. Krebs & J.J. Robinson (1 ♀, UBSZ); Whitehorse, Miles Canyon, 14.vii.1985, E. Krebs & J.J. Robinson (1 ♀, UBSZ); Whitehorse, Wolf Ck, 27.vi.1981, CSG (3 ♂, UBCZ). **JAPAN. Fukuoka:** Yōrō-no-Taki, Wakasugi-yama, Kyushu, 3.iv.1963, on stem of *Acer*, TS (1 ♂, KUMF). **Kumamoto:** Haki, Izumimura, 21.iv.1980, K. Ohara (2 ♂, KUMF); Kanayama, Kai, 8.v.1964, A. Kato (1 ♀, KUMF). **Shiga:** Otsu, iii.1955, PHA (5 ♂, 2 ♀, USNM). **Yamanashi:** Kanayama, Sudama, 2.vi.1995, TS (1 ♂, KUMF). **TAIWAN.** Tungpu, Takata, Lulinshan, Nantou Hsien, 10.iv.1965, TS (1 ♂, KUMF). **USA. Alaska:** Kenai NWR, 2 miE Fox Lk, 800ft, 10.vi.2004, J. Lewis (1 ♀, UAM); Kenai NWR, E Mystery Ck Rd, SW Mystery Ck, 850ft, 15.vi.2004, J. Lewis (1 ♂, UAM); Kenai NWR, E Wolverine Lk, 19.vi.2006, A. Wu (1 ♂, UAM). **California:** Alpine Co., West Fk Carson R, Snowshoe Springs Cpgd, 6600', 20.vi.1971, PHA (6 ♂, 6 ♀, USNM); Fresno Co., Dinkey Ck area, Laurel Ck, 4.vi.1987 (1 ♂, CNC); Mono Co., Tioga Pass, *Salix orestera*, 11.vii.1969, A.R. Moldenke, No. 2007 (1 ♂, CAS); Plumas Co., Lassen NF, N Fk Feather R, 28.v.1977, DDW (63 ♂, 27 ♀, CAS); San Bernardino Co., Camp Angelus [N34.145 W116.982], White Ceanothus, 28.v., 2.vi.1947, ALM (3 ♂, USNM); San Bernadino Co., San Bernadino Mts, Barton Flats, 16.vi.1955, ALM (1 ♀, USNM); Trinity Co., 5 km NW Mt. Eddy, FR17 at Parks Ck Trailhead, 41.343°N 122.5375°W, 2086 m, pine for., 8.vi.2009, J. Mlynarek (1 ♂, 2 ♀, LEM); Tuolumne Co., Lyons Reservoir, 4.vi.1963, PHA (1 ♂, 2 ♀, USNM); Tuolumne Co., Deadman Ck, 8000', 12.vii.1977, DDW (1 ♀, CAS). **Colorado:** Boulder Co., Caribou Flats, 9700', 30.vi.1989, D.W. Inouye (1 ♂, 1 ♀, USNM); Boulder Co., Corona Pass, 10,600', 6.vii.1961, JGC (3 ♂, 1 ♀, CNC); Boulder Co., Ridge Rd, Niwot Mt., 5.vii.1989, 11000', D.W. Inouye (1 ♂, 1 ♀, USNM); Cochetopa NF, John Smith Ranger Stn, 3.vii.1913, A.K. Fisher (1 ♀, USNM); Crested Butte, 8.viii.1968, F.C. Harmston (1 ♂, USNM); Delta Co., Grand Mesa NF, vii.1959 (1 ♂, USNM); Ft Collins, N. Banks (1 ♀, USNM); Grande Co., 10000', Cross Ck, 25.vi.1972, MT, W.W. Wirth (1 ♂, 1 ♀, USNM); Gilpin Co., 2 mi E Rollins Pass, 3048 m, 16.viii.1973, DDW (3 ♀, CAS); Grande Co., 2 mi W Rollins Pass, 2430 m, 6.viii.1973, DDW (1 ♂, 1 ♀, CAS); Gunnison Co., Cottonwood Pass, 12100', 29.vii.1961, JGC, BHP (2 ♀, CNC); Gunnison Co., Cottonwood Pass, 8.vii.1984, G.C. Eickwort (1 ♀, CAS); Gunnison Co., Gunnison NF, Cooper Lk, to Marion Pass, 2.viii.1988, G.C. Eickwort (1 ♀, CAS); Hinsdale Co., Mesa Seco, 12000', ex. *Potentilla diversifolia*, 12.vii.1974, P. Lincoln, A.R. Moldenke (1 ♂, 2 ♀, CAS); Lake Co., Independence Pass, 11500-12100', 31.vii.1961, JGC, BHP (1 ♂, 3 ♀, CNC); Monarch Pass, 8000', 21.vi.1940, ALM (1 ♀, USNM); Mt. Evans, Doolittle Ranch, 8-27.vii.1961, CHM, JGC (6 ♀, CNC); Mt. Evans, Echo Lk, 13-

26.vii.1961, BHP, CHM (6 ♂, 37 ♀, CNC); Mt. Evans, Timberline, 11–29.vii.1961, CHM (2 ♂, 6 ♀, CNC); Nederland, Science Lodge, 9500', 27–28.vi., 3.vii., 6.viii.1961, BHP, J.R. Stainer (2 ♂, 4 ♀, CNC); Nederland, caribou, 10,000', 18.vi.1961, CHM (1 ♂, CNC); Niwot Range, nr. Ward, 28.vi., 4.vii.1961, CHM (3 ♂, 13 ♀, CNC); Rocky Mtn NP, 3.viii.1968, F.C. Harmston (1 ♀, USNM); Summit Co., Loveland Pass, 28.vii., 7.viii.1961, CHM, JGC, BHP (5 ♀, CNC). **Idaho:** Blaine Co., Galena Summit, 8600', 15.vii.1961, BHP (1 ♂, CNC). **Montana:** Ravalli Co., 5 km E Lost Trail Pass, 27.vi.1952, Hubert & Jellison (1 ♂, 1 ♀, CAS). **New Mexico:** Las Vegas Mts, 11000', vi.1901, Cockerell (4 ♂, USNM). **Oregon:** Jackson Co., North Fk below Fish Lk, 42°22.606'N 122°21.625'W, 31.v.2009, B.M. Wiegmann et al. (6 ♂, 1 ♀, CNC); Klamath Co., 12 mi SW Keno, 6.v.1964, J. Schuh (1 ♂, WSU). **Utah:** Garfield Co., 15 km N Boulder, 12, 20.vi.1994, JFM (7#, CNC). **Washington:** Mt. Rainier, Summerland, 24.vii.1924, ALM (1 ♀, USNM); Mt. Rainier, White R, 20.vii.1924, ALM (1 ♂, USNM); Mt. Rainier, Yakima Pk, 19.viii.1934, ALM (1 ♀, USNM); Pierce Co., Mt. Rainier NP, 14 ENE Paradise, 46°45'44"N 121°39'26"W, 16.vi.2004, C.J. Borkent (1 ♂, LEM); Pierce Co., Mt. Rainier NP, 6.5 ENE Paradise, Stevens Cyn, 1000 m, 46°45'44"N 121°39'26"W, 19.vi.2005, C.J. Borkent (1 ♀, LEM); Yakima Co., 8 mi SW Tieton RS, Snoqualmie NF, Bear CK, 11–12.vi.1973, W.J. Turner (1 ♂, 1 ♀, USNM). **Wyoming:** Albany Co., 1.5 mi W Centennial, Snowy Ridge Rd., MT, 25.vii.1991, Miam (1 ♂, 2 ♀, CNC); Albany Co., nr. Laramie, MT, 1–9.vii.1991, B. Sorbid (6 ♀, CNC); Centennial, 24.vi.1933, I.H. Blake (1 ♂, USNM); Dunraven Pass, 27.vii.1956, ALM (1 ♀, USNM); Mirror Lk, Snowy Range Mts, 13.viii.1957, G.F. Knowlton (1 ♀, WSU); Sierra Madre Range, Battle Lk Rd, 18.vii.1961, BHP (1 ♀, CNC); Teton Pass, 16.vii.1961, JGC (1 ♀, CNC); Yellowstone NP, Canyon Village, 21.vii.1971, G.C. Steyskal (1 ♀, USNM).

Recognition. This species is distinguished by the distant branching of the radial vein (ie., radial fork with base opposite or usually distal to apex of R_{2+3}), katepisternum with shiny or polished spot and long hypoproct process.

Re-description. Wing length 4.1–4.6 mm. **Male.** Head brown, with brown to black setation, occiput finely greyish brown pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, greyish brown pollinose, lacking setulae. Ocellar triangle very prominent, with 2 pairs of thin setae; anterior ocellars moderately long, posterior ocellars short. Postvertical and postocular setae thin, long; additionally, occiput covered with numerous long hair-like setae on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel rather narrow basally, long, nearly 4.0 times longer than basal width, smoothly tapered; stylus very short, bristle-tipped; segment 9 longer than wide, apical bristle nearly as long as segment 9. Proboscis long, labium about as long as head height; palpus nearly as long as labrum.

Thorax black, with black setation; scutum viewed dorsally dull black brown with slightly prominent broad vitta down acr and similar narrow vitta down dc; katepisternum (and sometimes anepisternum) with shiny spot about middle. Proepisternum with several brownish hairs in lower and upper parts. Postpronotal lobe with several thin setae of different lengths. Mesonotal setae prominent; acr shorter than dc, arranged in 4 irregular rows anteriorly, becoming biserial posteriorly, lacking on prescutellar depression; dc irregular biserial anteriorly, uniserial posteriorly, anteriorly offset from row, slightly longer than length of acr, several prescutellar pairs long; presutural and postsutural supra-alar faces with several thin setae of different lengths, about 3 longer npl with additional shorter setae, 1 pal, 8 pairs of setl.

Legs long, very slender, almost wholly brownish, knees yellowish. Coxae and trochanters with unmodified bristly hairs of different lengths. Fore and mid femora with row of moderately long thin setae on posteroventral, dorsal and posterior faces. Hind femur with row of long anteroventral and dorsal setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly brownish infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly sinuate in apical part; radial fork with base opposite or usually distal to apex of R_{2+3} ; R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight to concave; M_4 somewhat shorter than dm-cu crossvein. Apex of cell cua slightly round, CuP+CuA long, ending just short of wing margin. Halter brown.

Abdomen brown; tergites viewed dorsally or laterally subshiny, finely pollinose, viewed posteriorly velvety brown; covered with numerous long (except tergites 6–8) brownish bristly setae. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded and slightly notched apex; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended beyond epandrium, parallel with phallus and bent nearly at right angles subapically; bent apical section subequal to apex of phallus, paired with

several pairs of long spine-like projections; apex rounded, sometimes upcurved; posterior margin with broad notch. Epandrium not greatly inflated laterally; dorsal bridge narrow; produced distally into slender subapical surstylus; apex of surstylus slender, arched medially (Fig. 8C). Phallus long and slender, arched beyond cercus, bent nearly at right angles subapically; apical section short and straight or arched apically; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, longer than gonocoxal apodeme; base of phallus produced posteriorly into slender lobe, strongly arched, broad subapically, tapered to slender apex. Cercus subquadrate, slightly tapered, with broadly rounded apex; shorter than epandrium; hypoproct produced into pair of very long, divergent lobes, nearly subequal to apical portion of cercus.

Female. Head with stronger and shorter setation. Dichoptic, ommatidia equally small. Frons very broad, entirely shining, with marginal setulae; ocellar triangle finely pollinose. Mesonotum with setation much shorter than in male; scutum viewed dorsally and, especially, anteriorly brownish grey pollinose, with more distinct darker vittae than in male. Scutellum with 6–8 pairs of setae. Femora (especially fore and mid femora) with shorter setae. Wing hyaline to slightly infuscate, veins rarely slightly clouded. Base of halter pale brown, knob slightly darker. Abdomen subshiny, finely pollinose; cercus brown, elongate.

Distribution. This species is known from western North America (ranging from Alaska to southern California and down the Rocky Mountains to New Mexico), Japan and Taiwan (Figs. 12B, 14A).

Remarks. There is variation in length of thoracic chaetotaxy in this species. In addition, the length of the apices of the phallus and postgonite is longer and slightly curved in Asian populations.

***Iteaphila pumila* Sinclair sp. nov.**

(Figs. 2B, 5A, 8D, 12A)

Type material. **HOLOTYPE**, ♂ labelled: “Unalakleet, / Alaska, / 16.VI.[19]61/ R. Madge”; “HOLOTYPE/ *Iteaphila/ pumila/ Sinclair*” (CNC). **PARATYPES: CANADA. Northwest Territories:** Aklavik, 25.vi.1931, Lot. 241, Bryant (3 ♂, CAS); Reindeer Depot, Mackenzie Delta, 24.vi.-6.vii.1948, JRV, W.J. Brown (12 ♂, 4 ♀, CNC; 1 ♀, USNM). **Yukon:** Dempster Hwy, km 416, 22–28.vi.1980, 750 m, DMW & D. Lafontaine (1 ♂, CNC); Dempster Hwy, km 420, MT, 66°35'N 136°18'W, 3–7.vii.1979, ROM Fld Pty (1 ♂, ROM); Eagle Plains, 65°47'N 137°47'W, 6.vii.1985, E. Bijdemast (1 ♀, UBCZ); Mason Hill, 67°19'N 137°40'W, 4.vii.1981, CSG (7 ♂, 6 ♀, UBCZ); North Fork Pass, Ogilvie Mts., 3500', 17,19.vi.1962, PJS, R.E. Leech (3 ♂, 1 ♀, CNC); North Fork Pass, Ogilvie Mts., 4100', 20.vi.1962, PJS (4 ♂, CNC); North Fork Pass, Ogilvie Mts., mi 42 Peel Plateau Rd., 3500', 25.vi.1962, PJS (5 ♂, CNC); North Fork Pass, 64°31'N 138°13'W, 3500–4500', 27.vi.1982, C.S. Cannings, L. Washington, R.A. Moore (1 ♂, UBCZ); E. Old Crow, Mason Hill, 2500', alpine slope, 67°24'N 137°48'W, 4.vii.1981, B.D. Marshall (1 ♂, 1 ♀, ROM); Richardson Mts, Arctic Circle, 13 km N, 66°40'N 136°18'W, 6.vii.1982, C.S. Cannings, L. Washington, R.A. Moore (2 ♂, 1 ♀, UBCZ); Solomon Dome, Dawson, 4048', 3.vii.1949, P.F. Bruggemann (1 ♀, CNC). **RUSSIA. Arkhangelsk Prov.** (Nenets Autonomous Okrug): near Narjan-Mar, 6.vii.2008, N. Vikhrev (1 ♂, ZIN). **Chukotka Autonomous Okrug:** Komsomolskiy, Chaunskiy District [about 69.42N 170.19E], shrubby tundra, 6.vii.1963, Gorodkov (1 ♂, ZIN); Autonomous Okrug: Pevek [69°42'00"N, 170°19'00"E], tundra, 29.vi.1963, Gorodkov (5 ♂, ZIN); same locality, 3.vii.1963, Gorodkov (2 ♂, ZIN); 24 km SE of Pevek, on flowers of *Dryas* sp., 1.vii.1963, Gorodkov (1 ♂, ZIN); 20 km SSE Iul'tin [68°26'00"N, 179°18'00"E], Amguema R, 22.vii.1963, Gorodkov (1 ♂, ZIN). **Irkutsk Prov.,** Chersky peak, 14.vii.1984, Zlobin (1 ♀, ZIN). **Magadan Prov.:** Ust'-Omchug, 1.vii.1971, mountain pine (*Pinus pumila*) on mountain top, Gorodkov (1 ♀, ZIN); upper current of Bol'shaya R, 63.01N 171.50E, 330 m, 16.vii.1959, Gorodkov (1 ♀, ZIN); Ust'-Omchug, 1.vii.1971, Gorodkov; mountain pine (*Pinus pumila*) on mountain top (1 ♂, ZIN); Ust'-Omchug, 1.vii.1971, leg. Gorodkov; mountain pine (*Pinus pumila*) on mountain top (1 ♂, ZIN); Indigirka R, mouth of In'yali R, larch forest with dwarf (Arctic) birch and moss on hill, 800–900 m, 23,24.vi.1976, V. Kovalev (1 ♂, 2 ♀, ZMMU); Indigirka R, course of Ystan-Yuryakh R, Momsky District, 29.vi.1976, V. Kovalev (1 ♀, ZMMU); Indigirka R, Ust'-Nera, airport, 14.vi.1976, V. Kovalev (1 ♀, ZIN). **Yakutia:** Kyusyur [70°41'05.47"N, 127°21'40.36"E], lower reach of Lena River, shore, sand, 14.vii.1957, Gorodkov (1 ♂, ZIN). **USA. Alaska:** Unalakleet, 15–28.vi., 3.vii.1961, B.S. Heming, R. Madge (30 ♂, 12 ♀, CNC; 1 ♂, 1 ♀, USNM).

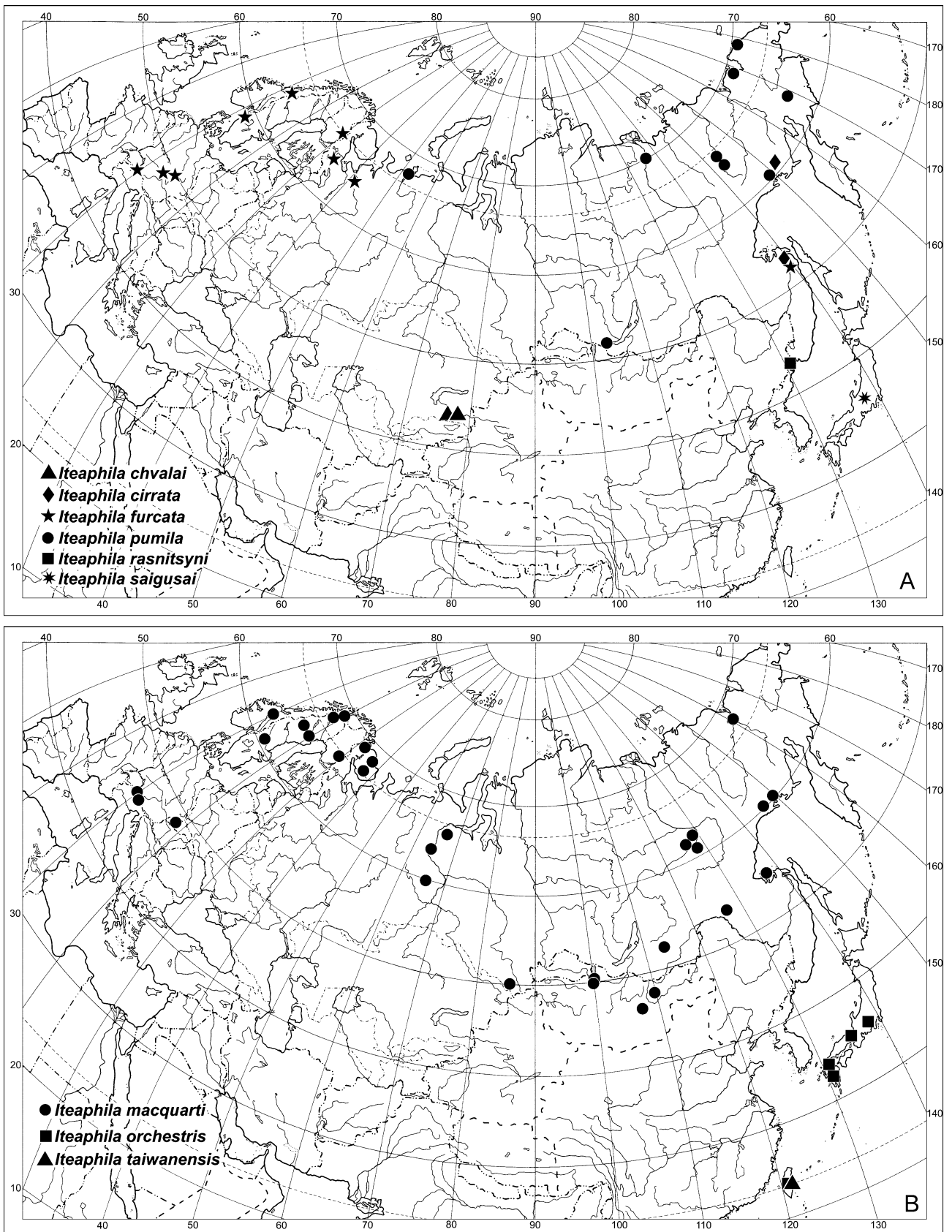


FIGURE 12. Distribution of species of *Iteaphila* in the Palearctic and Oriental regions. **A.** *I. chvalai* sp. nov., *I. cirrata* sp. nov., *I. furcata*, *I. pumila* sp. nov., *I. rasnitsyni* sp. nov., *I. saigusai* sp. nov. **B.** *I. macquarti*, *I. orchestris*, *I. taiwanensis* sp. nov.

Recognition. This is a small species with short mouthparts, discal cell produced distally, short male cercus and short apical section of the phallus with rounded apex.

Description. Wing length 2.2–2.5 mm. **Male.** Head black in ground-colour, with brown to black setation, occiput finely greyish pollinose. Dichoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, greyish brown pollinose. Ocellar triangle very prominent, with 2 pairs of thin setae; anterior ocellars moderately long, proclinate and laterocline, posterior ocellars short. Postvertical and postocular setae rather short, thin; additionally occiput covered with numerous similar setae in lower part. Antenna black; scape short, subequal to globular pedicel, both with short setae; postpedicel rather short, nearly 2.5 times longer than wide, broad basally, strongly tapered; stylus very short, bristle-tipped; segment 9 slightly longer than wide, apical bristles about as long as segment 9. Proboscis short, projected oblique; labium about half height of head; palpus projected parallel to labrum, somewhat shorter than labrum.

Thorax black in ground-colour, with black setation; scutum viewed dorsally dull brown, viewed anteriorly more distinctly brown pollinose; pleura uniformly greyish pollinose. Proepisternum with several brownish hair-like setae in lower and upper parts. Postpronotal lobe with 1 long and several short setae. Mesonotal bristles prominent; acr short, arranged in 2 close irregular rows, lacking on prescutellar depression; dc uniserial, offset from row anteriorly, in anterior part somewhat longer than acr, 2 prescutellar pairs long; 1 presut spal, 2 npl (with 3 additional thinner and paler setae), 1 short psut spal, 1 pal, 5–6 pairs of sclt.

Legs entirely brownish, unmodified, finely greyish pollinose. Coxae and trochanters with ordinary bristly hairs. Fore and mid femora with short posteroventral (longer and slightly stronger on mid femur) and similar dorsal setae. Hind femur with moderately long anteroventral and dorsal setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs flattened; pulvilli broad, shorter than tarsal claw.

Wing (Fig. 2B) finely brownish infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of R_1 ; anal lobe very prominent, acute. R_{2+3} straight in apical part; radial fork V-shaped, with base proximal apex of R_{2+3} , R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, produced apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly concave. Apex of cell cua slightly round, CuP+CuA long, ending just short of wing margin. Halter brown (sometimes stem paler).

Abdomen dark brown; viewed dorsally and laterally dull, finely greyish brown pollinose; viewed posteriorly velvety brown; covered with moderately long, brownish bristly hairs. Terminalia concolorous with abdomen, small. Hypandrium strongly rounded, broadly rounded apically, not produced; gonocoxal apodeme short and slender. Postgonite similar length as phallus, strongly bent apically with setose apex. Epandrium not greatly inflated laterally; dorsal bridge very narrow; produced distally into short, slender surstylus projecting obliquely medially. Phallus short and slender, strongly arched apically with rounded apex (Fig. 8D); ejaculatory apodeme plate-like, rounded, slightly longer than gonocoxal apodeme; base of phallus produced posteriorly into slender lobe, strongly arched with rounded apex. Cercus short quadrate, one-quarter length of epandrium, apex rounded; hypoproct produced into pair of very short, slender lobes, projecting free from cercus.

Female. Head with stronger setation; occiput, ocellar tubercle and frons finely brownish grey pollinose. Dichoptic, ommatidia equally small. Frons very broad, with marginal setulae. Scutum more distinctly greyish pollinose. Femora (especially fore and mid femora) with shorter bristles. Abdomen subshining from any view, with very short setae; cercus brown, elongate.

Etymology. The specific name is from the Latin *pumilus* (dwarfish, diminutive), in reference to the small size of this species.

Distribution. This species has a Beringian distribution, known mainly from Alaska, northern Yukon Territory, eastern Siberia and north part of the Russian Far East (Figs. 5A, 12A), but with a record from the extreme north of European Russia (Nenets Autonomous Okrug of Arkhangelsk Prov.).

***Iteaphila rasnitsyni* Shamshev sp. nov.**

(Figs. 11A, 12A)

Type material. HOLOTYPE, ♂ labelled: “[RUSSIA] Kedrovaya Pad' Nature Reserve/ south Primor'e/ Rasnitsyn 7.VI.1962 [In Russian]”; “HOLOTYPE/ *Iteaphila/ rasnitsyni / Shamshev* [red label] [specimen in poor condition]” (ZIN).

Recognition. This species is distinguished by the slender cercus, broad anvil-shaped phallic process and erect surstylus, projecting posterodorsally.

Description. Wing length 3.3 mm. **Male.** Head black in ground-colour, with brown to black setation, occiput finely greyish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, greyish brown pollinose. Ocellar triangle prominent, with 2 pairs of thin setae; anterior ocellars rather long, posterior ocellars short. Postvertical and postocular setae thin, moderately long; occiput covered with numerous short bristly hairs in lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel rather narrow, nearly 4.0 times longer than wide, smoothly tapered; stylus very short, bristle-tipped; segment 9 short, hardly distinguishable, apical bristle about as long as segment 9. Proboscis long, projected oblique; labium about half height of head; palpus projected parallel to labrum, nearly as long as labrum.

Thorax black in ground-colour, with black setation; scutum viewed dorsally dull brown, viewed anteriorly velvety brown; pleura uniformly greyish pollinose [damaged on prescutellar depression and scutellum]. Proepisternum with several brownish, short hairs in lower and upper parts. Postpronotal lobe with 1 long and several short setae. Mesonotal bristles prominent but thin; acr short, arranged in 2 close rows, lacking on prescutellar depression; dc 1–2-serial, offset from rows anteriorly, in anterior part somewhat longer than acr; several short presut and psut spal, 4 npl (with additional thinner and shorter setae).

Legs almost wholly brownish, knees yellowish, unmodified. Coxae and trochanters with ordinary bristly hairs. Fore femur with short, thin posteroventral and dorsal setae. Mid femur with similar pattern of setation but posteroventral setae longer and stronger on apical half. Hind femur with moderately long, thin, anteroventral and dorsal setae. Tibiae lacking prominent bristles. Tarsomere 5 on all legs flattened; pulvilli broad, shorter than tarsal claw.

Wing finely brownish infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly sinuate in apical part; radial fork V-shaped, with base proximal to apex of R_{2+3} ; R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M_4 somewhat longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter brown.

Abdomen brown, subshining (from any view), finely greyish pollinose, covered with long pale bristly hairs. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broad truncate apex; gonocoxal apodeme expanded apically. Postgonite posterior to phallus, extended slightly beyond epandrium, parallel with phallus and strongly arched subapically; bent apical section subequal to apex of phallus, paired with apex membranous, bearing roughened surface and teeth-like projections, apex rounded. Epandrium quadrate, not greatly inflated laterally; dorsal bridge very narrow; apex of surstylus very slender, projecting posterodorsally. Phallus long and slender, arched beyond epandrium, strongly recurved subapically; apical section long; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, longer than gonocoxal apodeme; base of phallus produced posteriorly into anvil-shaped lobe with pair of slender lateral prolongations (Figs. 11A). Cercus tapered and slender, slightly longer than half length of epandrium, finger-like and broad basally, apex narrow rounded, extended free from epandrium; hypoproct produced into pair of long, divergent lobes, projecting free from cercus.

Female. Unknown.

Etymology. The species is dedicated to the Russian palaeontologist and entomologist Professor Alexander P. Rasnitsyn (Palaeontological Institute of Russian Academy of Sciences, Moscow).

Distribution. This species is known from a single locality in the southern region of the Russian Far East (Fig. 12A).

***Iteaphila saigusai* Shamshev sp. nov.**

(Figs. 11B, 12A)

Type material. HOLOTYPE, ♂, labelled: “[NAGANO]/ Okushiga-gohgen/ May 31, 1975/ T. SAIGUSA col. (KUMF)”; “HOLOTYPE/ *Iteaphila/ saigusai/ Shamshev* [red label]” (KUMF).

Additional material examined. JAPAN. Yamanashi: Kanayama, 3.vi.1963, A. Kato (1 ♀, KUMF). It is uncertain whether this female is conspecific.

Recognition. This species is very similar to *I. orchestris* but the dorsocentral setae are multiserial and the radial fork is elongate.

Description. Wing length 3.9 mm. **Male.** Head brown, with brown to black setation, occiput finely greyish brown pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, greyish brown pollinose, lacking setulae. Ocellar triangle prominent, two pairs of thin proclinate setae; anterior ocellars moderately long, posterior ocellars short. Postvertical and postocular setae thin, moderately long; additionally, occiput covered with numerous long hairs in lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel narrow, long, nearly 4.0 times longer than wide, smoothly tapered; stylus very short, undistinguishable from apex of postpedicel, bristle-tipped; segment 9 very short, apical bristle nearly as long as segment 9. Proboscis long, projected obliquely; labium about as long as head is high; palpus projected parallel to labrum, brown, with short brownish setae, nearly as long as labrum.

Thorax black, with black setation; scutum viewed dorsally dull black brown with hardly prominent brown vittae down acr and dc setae; viewed anteriorly velvety brown, with more distinct vittae; anepisternum with small shining spot on middle. Proepisternum with several brownish hairs in lower and upper parts. Postpronotal lobe with 1 long and several short setae. Mesonotal bristles prominent; acr arranged in 2 irregular narrow rows, short, lacking on prescutellar depression; dc multiserial, mostly subequal in length to acr, 3 prescutellar pairs long; 1 presut spal, 4 long npl (with several short bristles), row of psut spal of different lengths, 1 pal, 8 pairs of sctl.

Legs long, slender, almost wholly brownish, knees yellowish. Coxae and trochanters with ordinary bristly hairs of different length. Fore femur with moderately long, thin setae on posteroventral, dorsal and posterior faces. Mid femur with similar pattern of setation but posteroventral setae stronger (especially on apical half). Hind femur with longer anteroventral and dorsal thin setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing distinctly infusate, with brownish veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly sinuate in apical part; radial fork elongate, with base proximal to apex of R_{2+3} ; veins R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M_4 longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter brown.

Abdomen brown; tergites viewed dorsally or laterally subshining, finely pollinose, viewed posteriorly velvety brown; covered with numerous long (except tergites 6–8) brownish bristly hairs. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly truncate apex, sharply tapered in ventral view; gonocoxal apodeme short and slender. Postgonite posterior to phallus, not extended beyond epandrium, parallel with phallus and curved sharply subapically; bent apical section shorter and more strongly arched than apex of phallus, closely approximated, paired with sculptured surface, more pronounced along outer margin; apex rounded. Epandrium not greatly inflated laterally; dorsal bridge narrow; produced distally into slender subapical surstylus; apex of surstylus slender, hook-like arched slightly medially. Phallus long and slender, arched beyond epandrium, bent nearly at right angles subapically; apical section long and sharply arched apically (Fig. 11B); apex rounded and membranous; ejaculatory apodeme plate-like, rounded, subequal in length to gonocoxal apodeme; base of phallus produced posteriorly into slender lobe, strongly arched, broad subapically, tapered to slender apex. Cercus subquadrate, slightly tapered, with broadly rounded apex; shorter than epandrium; hypoproct produced into pair of short, divergent lobes, one-third length of apical portion of cercus.

Female. Unknown.

Etymology. The species is named after the collector of this unique species and in recognition of Dr. Saigusa's dedication to Empidoid research.

Distribution. This species is confirmed from a single locality in Nagano Prefecture, Japan (Fig. 12A).

***Iteaphila sicamous* Sinclair sp. nov.**

(Figs. 11C, 14B)

Type material. **HOLOTYPE**, ♂ labelled: “8 km E. Sicamous, B.C. [CANADA: Bristish Columbia]/ 8-VI-1992/ A. Borkent CD1419”; “HOLOTYPE/ *Iteaphila/ sicamous/ Sinclair* [red label]” (CNC). **PARATYPE**: same data as holotype (1 ♂, CNC).

Recognition. This species is distinguished by its very long proboscis, 1.5 times head height; biserial acrostichal setae; abdominal setae pale; apex of postgonites slender, sinuous and lacking setae or pubescence; cercus short and slender and hypoproct process absent.

Description. Wing length 3.7–4.4 mm. **Male.** Head subcircular, black, with black to pale setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with pair of long, thin, proclinate ocellar setae. Postvertical and postocular setae long, thin, hair-like; occiput covered with numerous similar setae longer on lower part and generally paler. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 6 times longer than basal width, smoothly tapered; stylus very short, shorter than basal width of postpedicel, bristle-tipped, length of segment 9 slightly shorter than width, apical bristle longer than segment 9. Proboscis very long, 1.5 times head height, projected obliquely; labium longer than head height; palpus projected parallel to labrum, two-thirds length of labrum.

Thorax black (postpronotal lobe yellowish posteriorly and postalar ridge brownish yellow), with black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, somewhat shiny, lacking vittae. Proepisternum with several brown setae in lower and upper parts. Postpronotal lobe with several fine setae and 1 prominent seta. Mesonotal setae mostly prominent, 4 npl, 2–3 prescutellar dc, 1 pal and sct1 somewhat stronger; acr biserial, long, separated by less than half length of setula, ending at prescutellar depression; dc long, subequal to acr, uniserial; 6 pairs of sct1 in single row.

Legs yellowish brown. Coxae and trochanters with several short, fine setae. Fore and mid femora with row of long posteroventral setae. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly arched beneath stigma; radial fork with base well proximal to apex of R_{2+3} ; R_5 and M_1 slightly divergent before wing-apex; cell d broad, longer than basal cells, truncate apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly curved; M_4 shorter to longer than dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending just short of wing margin. Halter dark, base of stem light brown.

Abdomen narrowed proximad, covered with numerous, pale, long hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally subshiny, finely pollinose, viewed posteriorly brownish pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, enlarged. Hypandrium robustly rounded, upcurved apically with broad truncate apex; clothed in short sparse setae, with some longer posterior setae; gonocoxal apodeme long and broad. Postgonite posterior to phallus, extended posteriorly beyond epandrium, parallel with phallus and strongly bent nearly at right angles subapically; bent apical section sinuous, long and slender fused with bifid tip, lacking microtrichia. Epandrium not greatly inflated laterally; dorsal bridge narrow; anterior portion subquadrate and very broad, posterior third greatly narrowed compared to anterior portion; inner face of apex of surstylus unmodified. Phallus long and robust, arched beyond epandrium posteriorly, strongly bent subapically; apical section broad and straight; apex truncate and partially membranous; ejaculatory apodeme plate-like, rounded, longer than gonocoxal apodeme. Base of phallus produced posteriorly into trifid lobe; lateral pair sickle-shaped, slender; median lobe triangular, with broad base. Cercus tapered, very short, less than one-third length of epandrium; finger-like with apex tapered, slightly curved, narrowly rounded; hypoproct not produced into paired lobes (Fig. 11C).

Female. Unknown.

Etymology. The specific name is a noun in apposition, named after the type locality.

Distribution. This species is known from a single locality in southern British Columbia (Canada) (Fig. 14B).

Remarks. On the basis of the male terminalia (shape of cercus) and very long mouthparts, this species is apparently closely related to *I. triangula*.

***Iteaphila taiwanensis* Shamshev sp. nov.**

(Figs. 11D, 12B)

Type material. HOLOTYPE, ♂ labelled: “(Taiwan)/ Tungpu, Takata [in Japanese]/ Lulinshan/ Nantou Hsien”; “10.iv.1965/ T. Saigusa”; “HOLOTYPE/ Iteaphila/ taiwanensis/ Shamshev [red label]” (KUMF). PARATYPES: TAIWAN. Same data as holotype (11 ♂, 2 ♀, KUMF, CNC); Alishan, 2300 m, Chiayi Hsier, 9.iv.1965, TS (1 ♀, KUMF); vicinity of Taataka-anbu, ca. 2700 m, Kagi-Ken, 3.iv.1967, T. Shirozu (6 ♀, KUMF); Tonpogoe, 2500 m, Kagi-Ken, 28.iii.1967, T. Shirozu (1 ♂, KUMF); Tumpu-Taataka, Lulinshan, 10.iv.1955, TS (1 ♂, KUMF).

Recognition. Males of this species are distinguished by the long, strap-like postpedicel and dichoptic condition. Females are characterized by the large shiny spot on the katepisternum and pale yellow, hair-like abdominal setae.

Description. Wing length 2.9–3.9 mm. **Male.** Head brown, subglobular, with occiput produced, bearing black setation, finely greyish pollinose. Dichoptic, with equally small ommatidia. Frons very broad, shining or finely greyish pollinose (subshining) in different degrees, with several marginal setulae. Ocellar triangle prominent, with 2 pairs of thin setae; anterior ocellars long, proclinate and lateroclininate; posterior ocellars short. Postvertical and postocular setae thin, rather long; additionally, occiput covered with numerous short bristly setae on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short bristles; postpedicel rather broad basally but smoothly narrowed, very long, strap-like, 6.5–7.0 times longer than wide, pubescent with long, erect microtrichia; stylus very short, hardly visible, bristle-tipped; segment 9 as long as wide, apical bristle slightly longer than segment 9. Proboscis long, projected oblique; labium about half as long as head is high; palpus projected parallel to labrum, brown, with short brownish setae, nearly as long as labrum.

Thorax black, with brownish to black (stronger setae) setation; scutum viewed dorsally uniformly matt brown, viewed anteriorly velvety brown, with darker broad vitta down acr and similar narrow vitta down dc setae; anepisternum almost wholly uniformly brownish grey pollinose, katepisternum with large shining spot on about middle. Proepisternum with several short, brownish hairs in lower and upper parts. Postpronotal lobe with 1 moderately long, thin and several short setae. Mesonotal setae prominent; acr arranged in 2 irregular rows, short, rather broad, lacking on prescutellar depression; dc uniserial, offset from row anteriorly, mostly of subequal length to acr, 3 prescutellar pairs long; several thin setulae present on presut and psut spal faces, 1–2 npl (if 2 than posterior longer) with 2–3 additional setulae, 1 pal, 4–5 pairs of sclt.

Legs long, slender, almost entirely brownish (knees and extreme apex and base of femora and tibiae, respectively, yellowish), finely greyish pollinose, with reduced inconspicuous setation. Coxae and trochanters with numerous ordinary bristly setae of different lengths. Fore femur with short, thin, posteroventral setae longer subapically. Mid femur with similar pattern of setation but posteroventral subapical setae slightly longer and stronger. Hind femur with moderately long anteroventral and dorsal thin setae (former somewhat longer than latter). Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing finely uniformly infuscate, with brownish, slightly clouded veins; no bristle at wing base; stigma distinct brownish yellow, elliptical, overlapping apex of vein R_1 , below almost reaching R_{2+3} ; anal lobe very prominent, acute. R_{2+3} slightly sinuate in apical part; radial fork broad, nearly at right angles with base opposite apex of R_{2+3} ; R_5 and M_1 somewhat divergent before wing-apex; cell d broad, longer than basal cells, not produced apically (truncate); m-m crossvein long, M branches widely separated; dm-cu crossvein straight; M_4 somewhat shorter than dm-cu crossvein. Apex of cell cua slightly round, CuP+CuA long, ending short of wing margin. Halter with brown knob and usually paler stem.

Abdomen brownish, subshining, finely greyish pollinose, covered with moderately long pale bristly hairs. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded apex and deep, broad U-shaped notch when viewed posteriorly; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended beyond epandrium, parallel with phallus and strongly arched subapically; bent apical section shorter than apex of phallus, paired with apex membranous, bearing several pairs of spine-like projections; apex rounded. Epandrium not greatly inflated laterally; dorsal bridge very narrow; posterior half gradually tapered; apex of surstylus slender, arched medially (Fig. 11D). Phallus long and slender, arched beyond epandrium, strongly bent subapically; apical section short and slightly arched; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, with median notch, slightly longer than gonocoxal apodeme. Base of

phallus produced posteriorly into recurved trifold lobe with outer lobes sickle-shaped; median lobe broad and apex truncate. Cercus broad, less than half length of epandrium, thumb-like and broad basally, apex broadly rounded, extended free from epandrium; hypoproct produced into pair of long, divergent lobes, projecting free from cercus.

Female. Greatly varying in body size. Frons very broad, entirely shining. Postpedicel with unmodified microtrichia; shorter, about 5.0 times as long as wide. Legs varying in colour; in darker specimens similar to male (but fore and midlegs, including coxae, paler); in paler specimens fore and mid femora and tibiae with broader yellowish spaces and corresponding coxae yellowish to brownish yellow. Halter paler, with rather dusky yellow knob (in paler specimens almost wholly yellowish). Abdomen with shorter setation. Otherwise as in male. Cercus long, slender, brownish, shining.

Distribution. This species is known only from Taiwan, above 2000 m (Fig. 12B).

Etymology. The specific name is named after the country of origin.

Remarks. This is the only species of *Iteaphila* having dichoptic eyes in the male. The type series was collected on *Salix* surrounded by temperate forest (T. Saigusa pers. comm.).

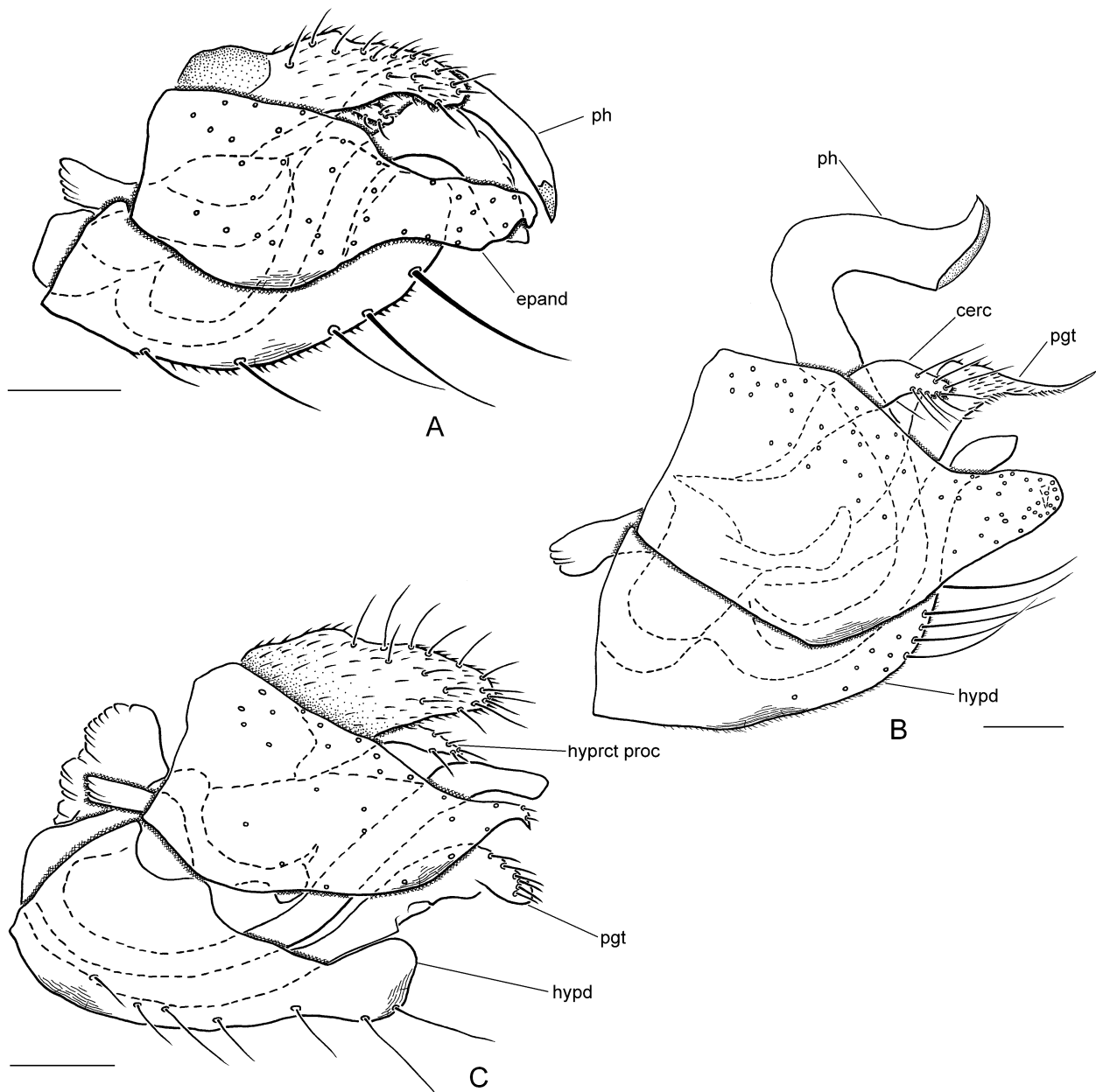


FIGURE 13. Male terminalia of *Iteaphila*, lateral view. **A.** *I. testacea*; **B.** *I. triangula*; **C.** *I. vetula*. Abbreviations: cerc—cercus; epand—epandrium; hypd—hypandrium; hyprct proc—hypoproct process; pgt—postgonite; ph—phallus. Scale bar = 0.1 mm.

Iteaphila testacea Melander

(Figs. 2D, E, 13A, 15)

Iteaphila testacea Melander, 1946: 37. Type locality: Lake Waha, Idaho, USA.

Type material examined. **LECTOTYPE** (here designated), ♀ labelled: “Lake Waha, IDA/ 9 June 1918/ A.L.Melander”; “HOLOTYPE/ *Iteaphila/ testacea/ Mel.* [red label]”; “ALMelander/ Collection/ 1961”; “*Iteaphila/ testacea/ Mel.* [hand written label]”; “LECTOTYPE/ *Iteaphila/ testacea Mel./ des.* B.J. Sinclair 2011” (USNM).

PARALECTOTYPES: **USA. Idaho:** same data as lectotype (2 ♀, USNM); Bovill, 18.vi.1911 (1 ♀, USNM).

Taxonomic notes. This species was described from four female syntypes and no holotype was designated in the original study. One of these females was labelled lectotype accordingly to fix and stabilize the current concept of the name.

Additional material examined. **CANADA. Alberta:** Banff NP, ex. flowers of *Ledum* [= *Rhododendron groenlandicum* [Labrador tea], 7.vii.1955, GES (14 ♀, CNC); Banff, Cascade Tr, 10.vii.1968, H.J. Teskey (1 ♀, CNC); Kananaskis, Seebe, For. Exp. Sta, 3.vii.1968, H.J. Teskey (1 ♀, CNC); Ptarmigan Trail, 20.vii.1928, O. Bryant (9 ♀, CAS) [prob. Kananaskis Country, 6500']; Sunwapta Pass, Banff-Jasper Hwy, 6.vii.1955, R. Coyles (1 ♀, CNC); Waterton Lakes NP, 14–20.vii.1980, H.J. Teskey (1 ♂, CNC). **British Columbia:** Cathedral PP, Quiniscoe Lk, MT, outflow in subalpine forest, 21.vii.1988, S.G. Cannings (2 ♀, UBCZ); 24 kmE Enderby, 8–9.vi.1991, AB (2 ♀, CNC); 6 km NE Falkland, 12–13.vii.1989, AB (2 ♀, CNC); 5–6 miE border Glacier NP, FIT, 11.v.-15.vi.1984, R.S. Anderson (1 ♀, DEBU); Hixon, 21.vi.1976, E. Dyer (1 ♀, CNC); 10 km N Kamloops, McQueen Lk, 14.vi.1973, H.J. Teskey (4 ♀, CNC); Keremeos, 1.vi.1923, C.B. Garrett (1 ♀, CNC); Kettle R & Grandy R, 1.vi.-1.x.1935, J.K. Jacob (1 ♀, RBCM); Kootenay NP, Daer-Pitts Aspen Burn 1, MT, 25.vi.-9.vii.2000, G. Gareau (1 ♂, 3 ♀, CNC); ditto, Burn 2, 25.vi.-9.vii.2000 (5 ♀, CNC); ditto, Burn 2, 2–9.vi.2000 (1 ♂, 1 ♀, CNC); ditto, 9–23.vii.2000 (2 ♀, CNC); ditto, Control 1, 2–16.vii.2000 (3 ♀, CNC); ditto, Control 2, 3–17.vi.2000 (1 ♂, 11 ♀, CNC); ditto, Control 2, 17.vi.-2.vii.2000 (3 ♂, 14 ♀, CNC); Yoho NP, Emerald Lk, 1300 m, 15.vii.1974, PHA (1 ♀, CAS). **Nova Scotia:** Cape Breton Highlands NP, Mackenzie Mtn., 400 m, 8–9.vi.1984 (1 ♂, 1 ♀, CNC). **Yukon:** Alaska Hwy, km 1706, Slims R delta, 60°59'N 138°34'W, 8.vi.1979, ROM Fld Pty (1 ♀, ROM). **USA. Alaska:** Kenai Nat. Wildlife Refuge, W Rhode Lk, 15.vi.2004, S. Grimes (1 ♀, UAM). **Colorado:** Jackson Co., Rabbitt Ears Pass, 7.vii.1961, JGC (1 ♀, CNC); Mt. Evans, Doolittle Ranch, 10,000', 17.vii.1961, CHM (1 ♀, CNC); ditto, 9800', 8–23.vii.1961, W.R.M. Mason, JGC, CHM (14 ♀, CNC); Mt. Evans, Echo Lk, 10,600', 20.vii.1961, BHP (1 ♀, CNC); Pike's Peak, Camera Point, 10.vi.1956, R. & K. Dreisbach (1 ♀, CNC). **Idaho:** Latah Co., 3 mi S Helmer, Potlach R nr Little Boulder Cpgd, 2600–2800', 29.v.1991, S.D. Gaimari (1 ♀, CNC); Latah Co., St. Joe NF, W Laird Pk, N46°57'37"W116°35'51", 12.vi.2011, BJS (1 ♀, CNC). **Massachusetts:** Mt. Greylock, 21.v.1964, JGC (3 ♂, CNC). **North Carolina:** Swain Co., GSMNP, ATBI Plot: Andrews Bald, MT 12. 10–24.v.2001, I. Stocks, M. McCord, G. Middleton (1 ♂, 3 ♀, CNC). **Oregon:** Boyer, 25.iv.1936, JCD, No. 17 (1 ♀, AMNH); Boyer, 29.v.1937, JHM, No. 20 (1 ♀, AMNH). **Washington:** Asotin Co., Field's Spring SF, 4 mi S Anatone, 3500–4000', 12–13.vi.1974, W.J. Turner (1 ♀, CHVC); Whatcom Co., Glacier, 25.v.1965, F. Schmid (1 ♂, CNC); Yakima Co., Snoqualmie NF, 13 km W Goose Prairie, 1345 m, 46°53'48"N 121°27'31"W, 16.vi.2005, C. Borkent (1 ♀, CNC).

Recognition. This species are distinguished by females mostly yellow except head and 10 or fewer scutellar setae, whereas males have a short hypoproct process and apex of phallus long and gradually arched.

Description. Wing length 2.7–4.2 mm. **Male.** Head subcircular, black, with black setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with long, thin, proclinate setae. Postvertical and postocular setae rather long, thin, hair-like; additionally, occiput covered with numerous similar setae longer on lower part. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4 times longer than basal width, smoothly tapered; stylus very short, shorter than basal width of postpedicel, bristle-tipped, length of segment 9 about equal to width, apical bristle longer than segment 9. Proboscis long, projected obliquely; labium shorter than head height; palpus projected parallel to labrum, half as long as length of labrum.

Thorax black (Fig. 2D) (postpronotal lobe often yellowish posteriorly and postalar ridge brownish yellow), with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed

dorsally largely velvety brown, slightly matt, lacking vittae. Proepisternum with several brown bristly hairs in lower and upper parts. Postpronotal lobe with several short, fine setae and 1 prominent seta. Mesonotal setae mostly not prominent, usually 2–4 npl, 2–3 prescutellar dc, 1 pal and sctl somewhat stronger but their number and position varying (except pal); acr short, biserial, separated by less than length of setula ending at prescutellar depression; dc short, subequal to length of acr, uniserial; 4–6 pairs of sctl in single row.

Legs light brown (knees not paler). Coxae and trochanters with several short, fine setae. Fore and mid femora with row of long posteroventral setae. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} slightly arched beneath stigma; radial fork with base proximal to apex of R_{2+3} ; R_5 and M_1 divergent before wing-apex; cell d broad, longer than basal cells, truncate to slightly produced apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly curved; M_4 longer than length of dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter dark.

Abdomen narrowed proximad, covered with numerous, brown, long hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally subshining finely greyish brown pollinose, viewed posteriorly densely greyish brown pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded apex; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended slightly beyond epandrium, parallel with phallus and strongly arched subapically; bent apical section subequal to apex of phallus, paired with apex membranous, lacking spine-like projections; apex rounded (Fig. 13A). Epandrium not greatly inflated laterally; dorsal bridge very narrow; posterior half greatly narrowed compared to anterior half; apex of surstylus slender, hook-like. Phallus long and slender, arched well beyond cercus, strongly bent subapically; apical section long and slightly arched; apex pointed and membranous; ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme; base of phallus produced posteriorly into recurved lobe with pair of slender apical dorsal prolongations. Cercus tapered, distinctly shorter than epandrium, finger-like and broad basally, apex rounded, extended free from epandrium; hypoproct produced into pair of short, divergent lobes, projecting free from cercus.

Female. Head dark brown to greyish compared to bright yellow body and legs (Fig. 2E). Occiput densely brownish grey pollinose. Dichoptic, with equally small ommatidia. Gena very narrow. Frons very broad, almost parallel-sided, with marginal setulae, densely pollinose. Anterior ocellars broadly laterocline, moderately long; posterior ocellars minute. Scutum occasionally when viewed dorsally with 3 faint, narrow blackish vittae down acr and dc setae. Chaetotaxy as in males, except 4–5 sctl. Legs mostly yellow with apical tarsi brownish; setation of fore and mid femora inconspicuous. Wing almost hyaline. Abdomen yellow; covered with short, brownish setae. Cercus brownish, elongate, slender.

Distribution. This is a transcontinental species, most commonly encountered in western North America (from Alaska to Colorado) and isolated mountainous regions in eastern North America (Fig. 15).

Remarks. The male of *I. testacea* is described here for the first time. It was associated with females on the basis of thoracic chaetotaxy.

Iteaphila triangula (Coquillett)

(Figs. 13B, 14B)

Empis triangula Coquillett, 1900: 410. Type locality: Yakutat, Alaska, USA [after lectotype designation]; Melander, 1902: 296. *Iteaphila triangula* (Coquillett): Melander, 1928: 104; Melander, 1946: 37.

Type material examined. **LECTOTYPE** (here designated), ♂ labelled: “Yakutat, Alaska/ June 21 '[18]99”; “Harriman Expedition'99/ T.Kincaid, Collector”; “ParatypeNo./ 5214/ U.S.N.M. [red label]”; “Iteaphila/ triangula/ Coq. [hand-written]”; “LECTOTYPE/ of *Empis/ triangula* Coq./ det. B.J. Sinclair 2011 [red label]” (USNM). **PARALECTOTYPES:** **CANADA. British Columbia:** Lowe's Inlet, 3.vi.1899, Harriman Expedition'99, T. Kincaid; Paratype No. 5214, U.S.N.M. (10 ♀, USNM). **USA. Alaska:** same data as lectotype (1 ♂, 2 ♀, USNM);

Sitka, 16.vi.1899, Harriman Expedition'99, T. Kincaid; Paratype No. 5214, U.S.N.M. (1 ♂, USNM); Farragut Bay, 8.vi.1899, Harriman Expedition'99, T. Kincaid; Paratype No. 5214, U.S.N.M. (1 ♀, USNM).

The following locality was not listed in the original publication, but type labels are present (presumably attached subsequently) and are likely some of the missing male syntypes: "Orca/ 6 27 99"; "Harriman Expedition'99/ T.Kincaid, Collector"; "ParatypeNo./ 5215/ U.S.N.M." (4 ♂, USNM).

Taxonomic notes. A male specimen was labelled lectotype accordingly to fix and stabilize the current concept of the name.

Additional material examined. CANADA. Alberta: Moraine L, 11.vii.1925, O. Bryant (1 ♀, CAS); Waterton Lakes NP, Cameron Lk, 17,18.vi.1956, O. Peck, E.E. Sterns (1 ♂, 4 ♀, CNC). **British Columbia:** Bowser, 30.v.,7.vi.1955, J.R. McGillis (2 ♀, CNC); Hedley, Nickel Plate, 5000', 24.vii.1953, D.F. Harwick (1 ♀, CNC); Horne Lk, 4.vi.1955, R. Coyles (3 ♀, CNC); Kaien Is., 6.v.1979, R.J. Cannings (1 ♂, UBCZ); Kitimat, 2.vi.1960, JGC, R. Pilfrey, flowers of *Vaccinium* (2 ♀, CNC); Kootenay NP, Daer-Pitts Aspen Burn 1, MT, 25.vi.-9.vii.2000, G. Gareau (1 ♀, CNC); Manning Pk, 1700 m, 27.vi.1984, R. Danielsson (2 ♀, MZLU); Robson, 25.vi.1959, H.R. Foxlee (1 ♀, UBCZ); Shatford Ck, 1500 m, 29.vi.1981, R.J. Cannings (1 ♀, UBCZ); Mt. Thornhill, nr. Terrace, 21.vi., 14.vii.1960, JGC (2 ♂, 2 ♀, CNC); 10 mi W Terrace, 9.vi.1960, JGC (1 ♀, CNC); 32 mi SW Terrace, 4.vi.1960, GES (1 ♀, CNC); Vancouver, 25.iii.1915, 7.iv.1915, 8.iv.1916 (1 ♂, 2 ♀, USNM); Vancouver, 7.v.1932, GJS (1 ♀, UBCZ). **USA. Alaska:** Kenai NWR, N Fuller Lk, 1750ft, 21.vi.2004, G. Grimes (1 ♂, UAM); Kenai NWR, 2.1 kmESE Pothole Lk, 4.8 kmW Upper Russian Lk, 800ft, 14.vi.2004, J. Lewis (1 ♀, UAM). **Montana:** Glacier Pk, Grinnell Lk, 24.vii.1935, ALM (1 ♀, USNM). **Washington:** Ocean Park, 7.v.1954 (1 ♀, WSU); Pierce Co., Mt. Rainier NP, 14 km ENE Paradise, Owyhigh Tr, 46°45'44"N 121°39'26"W, 16.vi.2004, C.J. Borkent (1 ♀, CNC); Skagit Co., Baker Lk, 27.v.1965, F. Schmid (1 ♂, 1 ♀, CNC); Tacoma, 12.iv.1913 (3 ♀, USNM).

Recognition. This species is distinguished by the very long proboscis, 1.2–2 times head height, apex of phallus broad and upturned, hypandrium with tuft of stout black setae, and hypoproct process absent. Female coloration varies from dark to entirely yellowish red.

Re-description. Wing length 3.7–4.5 mm. **Male.** Head subcircular, black, with black to pale setation; occiput brownish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, brownish grey pollinose. Ocellar triangle very prominent, with pair of long, thin, proclinate ocellar setae. Postvertical and postocular setae long, thin, hair-like; additionally, occiput covered with numerous similar setae longer on lower part and generally paler. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4.5 times longer than basal width, smoothly tapered; stylus very short, shorter than basal width of postpedicel, bristle-tipped, length of segment 9 about half length of width, apical bristle longer than segment 9. Proboscis very long, 1.5–2 times head height, projected obliquely; labium longer than head height; palpus projected parallel to labrum, slightly shorter than length of labrum.

Thorax black (postpronotal lobe often yellowish posteriorly and postalar ridge brownish yellow), with brown to black setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely velvety brown, somewhat shiny, lacking vittae. Proepisternum with several brown bristly hairs in lower and upper parts. Postpronotal lobe with several fine setae and 1 prominent seta. Mesonotal setae mostly prominent, usually 2–4 npl, 2–3 prescutellar dc, 1 pal and sctl somewhat stronger but their number and position varying (except pal); acr biserial, separated by half length of setula, ending at prescutellar depression; dc short, subequal to length of acr, uniserial; 4–6 pairs of sctl in single row.

Legs brown (knees paler). Coxae and trochanters with several short, fine setae. Fore and mid femora with row of long posteroventral setae. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

Wing infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R₁; anal lobe very prominent, acute. R₂₊₃ slightly arched beneath stigma; radial fork with base proximal to apex of R₂₊₃; R₅ and M₁ divergent before wing-apex; cell d broad, longer than basal cells, truncate to slightly produced apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly curved; M₄ subequal to length of dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA long, ending short of wing margin. Halter dark.

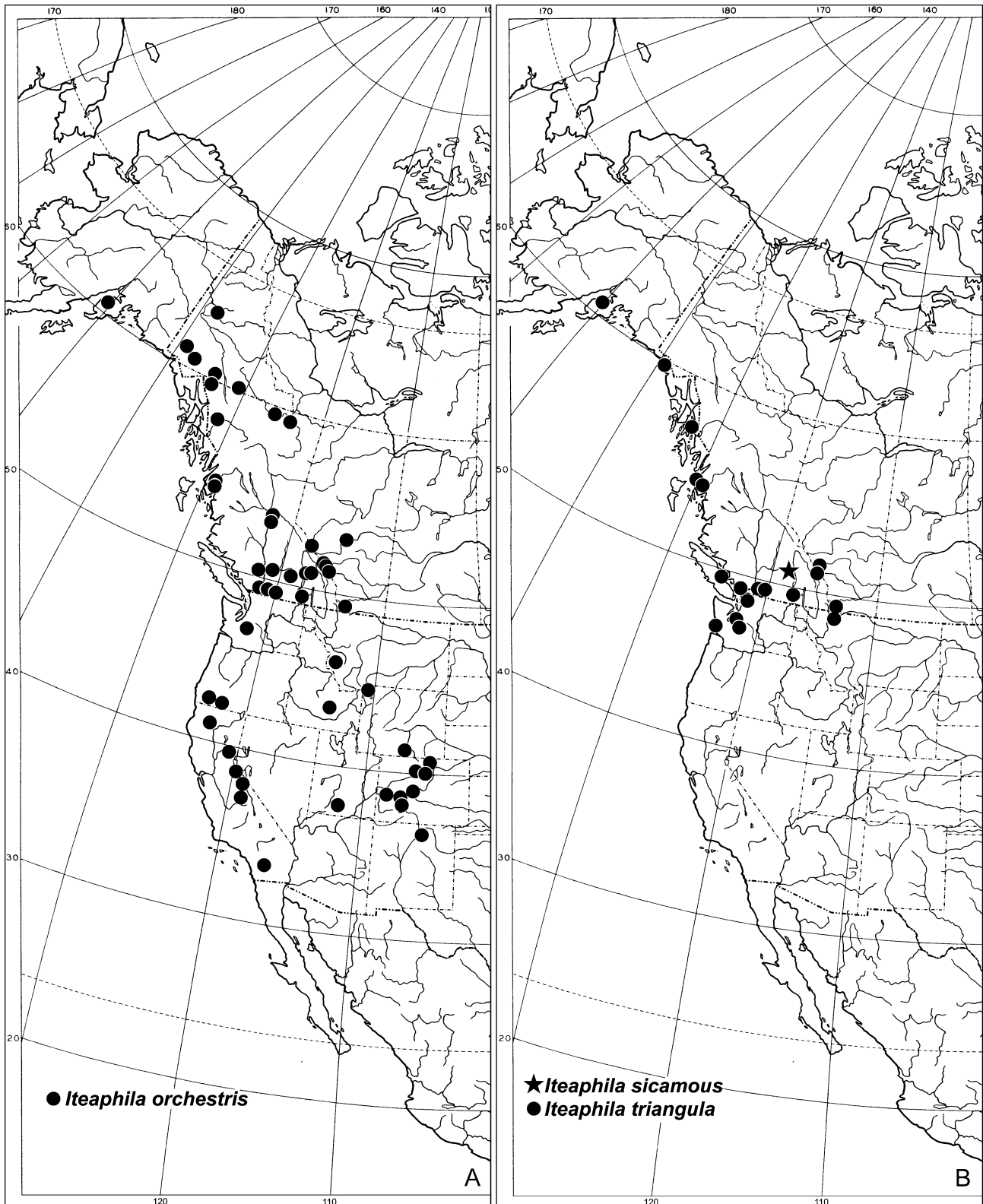


FIGURE 14. Distribution of species of *Iteaphila* in North America. A. *I. orchestris*; B. *I. sicamous* sp. nov., *I. triangula*.

Abdomen narrowed proximad, covered with numerous, brown, long hair-like setae, postermarginal setae slightly prominent; tergites viewed dorsally subshiny, finely greyish pollinose, viewed posteriorly densely greyish brown pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, enlarged. Hypandrium robustly rounded, upcurved apically with broadly hooked apex; clothed in dense patch of long, erect setae; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended beyond epandrium, parallel with phallus and

strongly bent nearly at right angles subapically; bent apical section strongly attenuated into slender arched tip, clothed in spine-like microtrichia. Epanthrium not greatly inflated laterally; dorsal bridge narrow; anterior half subquadrate and very broad, posterior half greatly narrowed compared to anterior half; inner face of apex of surstylus with ventrally projected pointed hook-like process. Phallus long and robust, arched well beyond cercus, strongly bent subapically (Fig. 13B); apical section broad with apex attenuated and recurved; apex rounded and partially membranous; ejaculatory apodeme plate-like, rounded, shorter than gonocoxal apodeme; base of phallus produced posteriorly into pair of widely separated lobes, nearly parallel to margin of hypandrium, arched, apex rounded. Cercus tapered, distinctly shorter than epanthrium, finger-like and narrow basally, apex sharply rounded, extended free from epanthrium; hypoproct not produced into paired lobes.

Female. Two forms present: dark and yellow. In dark form head and thorax black, legs and abdomen pale brown with pale setae; wing infuscate with clouding about veins. In yellow form head black, thorax, abdomen and legs mostly yellow, except apical tarsi brownish; wings faintly infuscate; setae of abdomen dark. Occiput densely brownish grey pollinose. Dichoptic, with equally small ommatidia. Gena very narrow. Frons very broad, almost parallel-sided, with marginal setulae, densely pollinose. Anterior ocellars broadly latero-clinate, moderately long; posterior ocellars minute. On yellow form, scutum occasionally when viewed dorsally with 3 faint, narrow blackish vittae down acr and dc setae. Legs with setation of fore and mid femora inconspicuous. Cercus brownish, elongate, slender.

Distribution. This species is confined to northwestern North America, ranging from Alaska to Washington (Fig. 14B).

Iteaphila vetula Melander (Figs. 13C, 15)

Iteaphila vetula Melander, 1946: 37. Type locality: Loon Lake, Washington, USA.

Type material examined. HOLOTYPE, ♂ labelled: “LoonLakeWA/ 16 May [19]24/ ALMelander”; “HOLOTYPE/ Iteaphila/vetula Mel. [red label]”; “ALMelander/ Collection/ 1961” (USNM). **PARATYPES: USA. Idaho:** Craig Mts., 8.vi.1918, ALM (2 ♂, USNM). **Washington:** same data as holotype (1 ♂, USNM - damaged); Kettle Falls, 3.v.1912, ALM (1 ♀, USNM).

Additional material examined. CANADA. British Columbia: Trinity Valley, 21.v.1959, L.A. Kelton (1 ♂, CNC). **USA. California:** El Dorado Co., Eldorado NF, Echo Lk, 2300 m, 38°50'N 120°2'W, 31.v.2009, BJS (22 ♂, 19 ♀, CNC); Pumas Co., Lassen NF, N Fk Feather R, 28.v.1977, DDW (73 ♂, 15 ♀, CAS); Tuolumne Co., Dardanelles Cpgd, 30.v.1963, PHA (1 ♂, AMNH). **Oregon:** Klamath Co., 12 mi NE Bly, Deming Ck, slopes of Gearhart Mt., 5800', 21.vi.1978, N. Herman (2 ♂, 3 ♀, AMNH); Lake Co., Cox Ck Wildlife Area, 14.vi.1984, R. Danielsson (1 ♂, 1 ♀, MZLU).

Recognition. The species is distinguished by the pale golden setae of the thorax, especially scutellar setae and greyish setae of the abdomen.

Re-description. Wing length 2.7–3.3 mm. **Male.** Head subcircular, black, with greyish setation; occiput greyish pollinose. Holoptic, with upper ommatidia enlarged. Frons represented by small triangular space just above antennae, bare, greyish pollinose. Ocellar triangle very prominent, with long, thin, proclinate setae. Postvertical and postocular setae rather long, thin, hair-like; additionally, occiput covered with numerous similar setae longer on lower part and greyish. Antenna brown; scape short, subequal to globular pedicel, both with short setae; postpedicel nearly 4 times longer than basal width, smoothly tapered; stylus long, longer than basal width of postpedicel, bristle-tipped, length of segment 9 twice width, apical bristle shorter than segment 9. Proboscis usually longer than head height, projected obliquely; labium shorter than head height; palpus projected parallel to labrum, slightly shorter than length of labrum.

Thorax black (postpronotal lobe often yellowish posteriorly and postalar ridge brownish yellow), with greyish to golden setation; smoothly arched, prescutellar depression very slightly prominent; scutum viewed dorsally largely greyish, slightly matt, with dark vittae following acr and dc rows. Proepisternum with several pale hairs in lower and upper parts. Postpronotal lobe with numerous long, fine pale setae. Katepisternum with bare shiny dorsal patch. Mesonotal setae mostly not prominent, usually 2–3 npl, 2–3 prescutellar darker dc, 1 pal and sctl somewhat stronger but their number and position varying (except pal); acr short, irregular biserial, separated by less than

length of setulae ending at prescutellar depression; dc short, subequal to length of acr, biserial; 5–6 pairs of seti in single row.

Legs yellowish brown, setae whitish. Coxae and trochanters with several short, fine setae. Fore and mid femora with row of long posteroventral setae. Hind femur with row of long anteroventral and dorsal and short posteroventral hair-like setae. Tibiae lacking prominent setae. Tarsomere 5 on all legs slightly flattened; pulvilli broad, shorter than tarsal claw.

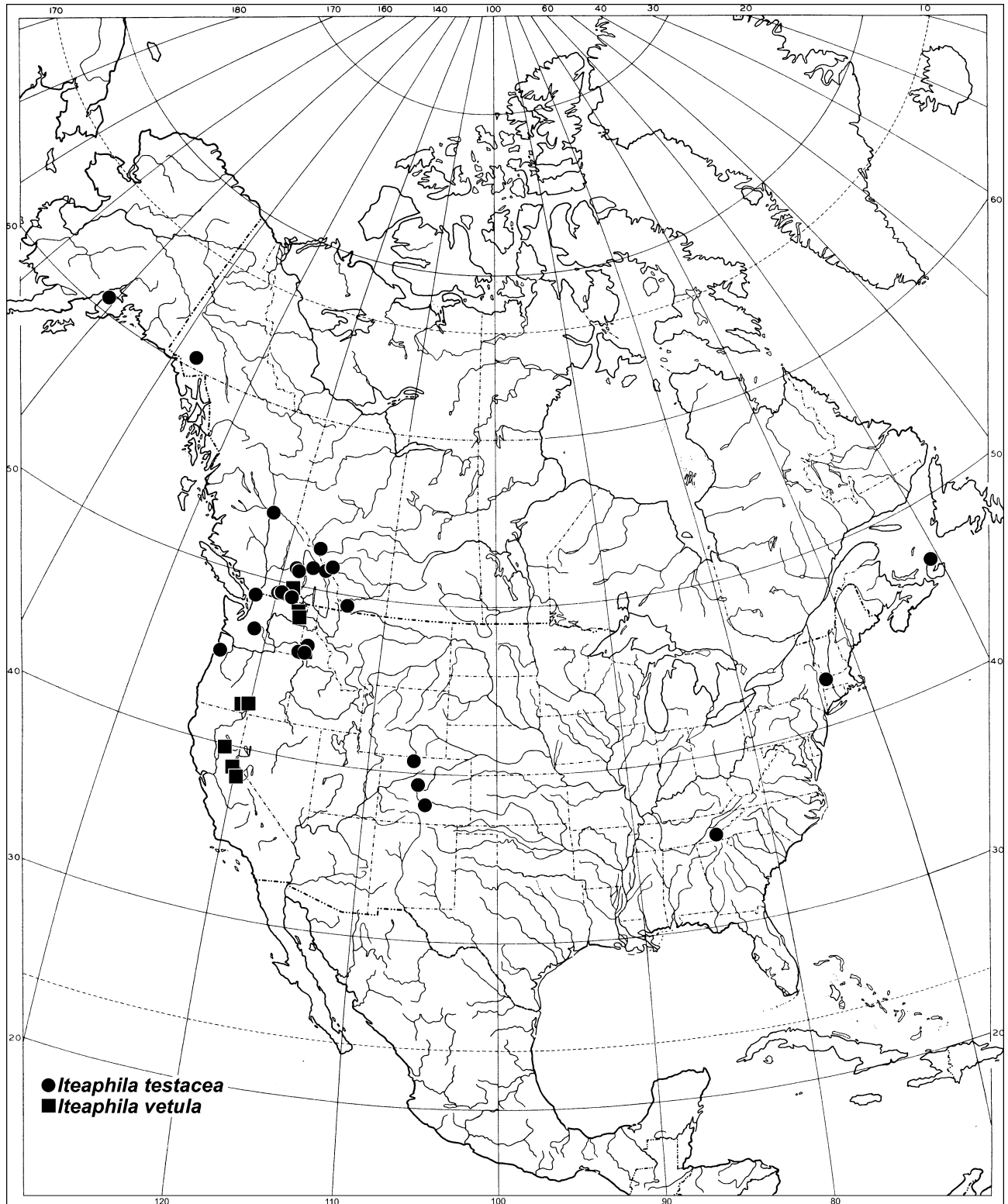


FIGURE 15. Distribution of *Iteaphila testacea* and *I. vetula* in North America.

Wing slightly infusate, with brown veins; no bristle at wing base; stigma distinct brownish, elliptical, overlapping apex of vein R_1 ; anal lobe very prominent, acute. R_{2+3} straight beneath stigma; radial fork with base distal to apex of R_{2+3} ; R_5 and M_1 divergent before wing-apex; cell d broad, longer than basal cells, truncate to slightly produced apically; m-m crossvein long, M branches widely separated; dm-cu crossvein slightly curved; M_4 longer than length of dm-cu crossvein. Apex of cell cua slightly rounded, CuP+CuA short and faint, ending well short of wing margin. Halter mostly dark except base of stem.

Abdomen narrowed proximad, covered with numerous, whitish, long hair-like setae, posteromarginal setae not prominent; tergites viewed dorsally subshining finely greyish pollinose, viewed posteriorly densely greyish pollinose; sternites finely pollinose. Terminalia concolorous with abdomen, small. Hypandrium slightly rounded, upcurved apically with broadly rounded apex; gonocoxal apodeme short and slender. Postgonite posterior to phallus, extended slightly beyond epandrium, parallel with phallus and strongly arched subapically; bent apical section subequal to apex of phallus, paired with apex membranous, bearing several pairs of spine-like projections; apex rounded. Epandrium not greatly inflated laterally; dorsal bridge very narrow; posterior half gradually tapered; apex of surstylus slender, hook-like (Fig. 13C). Phallus long and slender, arched beyond epandrium, strongly bent subapically; apical section short and slightly arched; apex rounded and membranous; ejaculatory apodeme plate-like, rounded, slightly longer than gonocoxal apodeme; base of phallus produced posteriorly into recurved lobe with pair of slender apical dorsal prolongations. Cercus tapered, distinctly shorter than epandrium, finger-like and broad basally, apex broadly rounded, extended free from epandrium; hypoproct produced into pair of long, divergent lobes, projecting free from cercus.

Female. Head dark brown with short setation. Occiput shiny and thin greyish pollinose. Dichoptic, with equally small ommatidia. Gena very narrow. Frons very broad, almost parallel-sided, with marginal setulae, shiny, lacking pollinosity. Anterior ocellars latero-clinate, short; posterior ocellars shorter. Scutum when viewed dorsally with 3 faint, narrow dark brown vittae down acr and dc setae. Chaetotaxy as in male. Legs mostly yellow with apical tarsi brownish; setation of fore and mid femora inconspicuous. Wing almost hyaline; radial fork position variable: slightly proximal or distal to apex of R_{2+3} . Abdomen dark brown, shiny; sparsely covered with short, greyish setae. Cercus brownish, elongate, slender.

Distribution. This species is confined to western North America, ranging from southern British Columbia to California (Fig. 15).

Remarks. This species was collected in California (Echo Lake) from service berry blossoms (*Amelanchier utahensis* Koehne).

Doubtful species in *Iteaphila*

Empis luctuosa Kirby

Empis luctuosa Kirby, 1837: 311. Type locality: "65°" [Canada], *nomina dubium*.

Empis geniculata Kirby, 1837: 312. Type locality: "65°" [Canada]; Coquillet, 1895: 397.

Iteaphila luctuosa (Kirby): Melander, 1928: 104; Tuomikoski, 1958: 126.

Remarks. The type series of *E. luctuosa* was collected from northwestern Canada at latitude 65° by the surgeon and naturalist John Richardson who accompanied Sir John Franklin on both of his Polar Seas expeditions (1825–1827), exploring the Arctic Ocean coastline of the Northwest Territories of Canada. Richardson led a party during the second expedition, mapping the coast west of the Coppermine River (Library and Archives Canada 2006). The results of his collection were published in four volumes of *Fauna Boreali-Americana*, with the Reverend William Kirby describing the insects.

The type material of *E. luctuosa* and *E. geniculata* were not located in the British Museum and are presumed destroyed. Walker (1849, p. 496) recorded a specimen he identified as *E. luctuosa* from Nova Scotia (from Lieut. Redman's collection). This specimen is present in the British Museum and labelled: "R" [green triangular label]; "Nova Scotia [printed]"; "luctuosa, Kirby,". The male specimen was examined and although the abdomen is lost, it is definitely a specimen of *I. macquarti*.

The assumption that *E. luctuosa* is congeneric (i.e., a species of *Iteaphila*) (Melander 1928) was likely based on Walker's (1849) examination of the specimen from Nova Scotia, although likely a contemporary, it is not from

the original type series. Walker provided no further details in his determination of this species. Since the original description does not permit generic recognition and combined with the loss of the type series, it is concluded that this species should be considered a *nomina dubium*, assigned as a doubtful species of *Iteaphila*.

Key to species of the *Iteaphila macquarti* group from the Palaearctic and Oriental regions

- 1 Antennal stylus long, nearly half of postpedicel length, lacking apical bristle. Scutellum with 2–3 pairs of setae. Basal costal bristle present. Epandrial lamella with additional lobe (*I. setosa* group) See Shamshev and Sinclair (2009)
- Antennal stylus very short relative to postpedicel length, bristle-tipped. Scutellum at least with 4 pairs of setae. Basal costal bristle absent. Epandrial lobe lacking additional lobe (Fig. 6E) (*I. macquarti* group) 2
- 2 Male 3
- Female (unknown in *I. rasnitsyni*, *I. saigusai*, *I. cirrata*) 13
- 3 Antennal segment 9 very short (shorter than wide), stylus often weakly distinguishable from apex of postpedicel 4
- Antennal segment 9 longer (at least as long as wide), stylus distinct from apex of postpedicel 9
- 4 Abdomen covered with pale bristly hairs 5
- Abdomen covered with black to brown bristly hairs 6
- 5 Males dichoptic. Antenna with postpedicel very long (about 7.0 times longer than wide), covered with long, erect microtrichia (Taiwan) *I. taiwanensis* **sp. nov.**
- Males holoptic. Antenna with postpedicel shorter (about 4.0 times longer than wide), covered with unmodified microtrichia (South Russian Far East) *I. rasnitsyni* **sp. nov.**
- 6 Phallus loop-like, constricted about middle (Figs. 4D, 8B) 7
- Phallus evenly curved, uniform throughout (Figs. 6D, 11B) 8
- 7 Epandrial lobe viewed laterally subrectangular, rounded apically (Fig. 8B). Katepisternum with shiny spot on middle (Holarctic, Oriental) *I. nitidula* Zetterstedt
- Epandrial lobe viewed laterally subtriangular, pointed apically (Fig. 4D). Katepisternum finely pollinose (Russia, western Nearctic) *I. cirrata* Shamshev **sp. nov.**
- 8 Phallus long, thin, produced downwards far beyond epandrium (Fig. 6D) (Europe) *I. furcata* (Zetterstedt)
- Phallus short, thickened in apical part, not produced downwards beyond epandrium (Fig. 11B) (Japan) *I. saigusai* **sp. nov.**
- 9 Postpedicel short, about 2.5 times as long as wide. Scutellum with 5–6 pairs of setae. Smaller, with wing length about 2.5 mm (western Nearctic, Russia) *I. pumila* **sp. nov.**
- Postpedicel long, about 4.0 times as long as wide. Scutellum with at least 7–8 pairs of setae. Larger, with wing length at least about 3.5 mm 10
- 10 Acrostichal setae arranged in 2 irregular rows. Wing finely infusate 11
- Acrostichal setae at least 3–4 serial. Wing distinctly brownish infusate 12
- 11 Antennal scape and pedicel with long setae. Proboscis shorter, labium somewhat more than half height of head. Oblique hypoproct process present (Nepal) *I. nepalensis* **sp. nov.**
- Antennal scape and pedicel with short setae. Proboscis very long and slender, nearly 2.0 times as long as head height (Fig. 2F). Oblique hypoproct process absent (Kazakhstan) *I. chvalai* **sp. nov.**
- 12 Acrostichal and dorsocentral setae long and more numerous, multiserial. Katepisternum densely pollinose (Holarctic) *I. macquarti* Zetterstedt
- Acrostichal and dorsocentral setae short and less numerous, the latter 1–2-serial. Katepisternum with shiny or polished spot on middle (western Nearctic, Japan) *I. orchestris* Melander
- 13 Antennal segment 9 very short (shorter than wide), stylus not distinguishable from apex of postpedicel. 14
- Antennal segment 9 longer (at least as long as wide), stylus distinct from apex of postpedicel 16
- 14 Thoracic pleuron entirely finely pollinose *I. furcata* (Zetterstedt)
- Thoracic pleuron with shining spot(s) 15
- 15 Katepisternum with large shiny spot on middle. Abdomen covered with moderately pale yellow, hair-like setae *I. taiwanensis* **sp. nov.**
- Anepisternum and katepisternum largely shiny or polished. Abdomen covered with very short, brownish hair-like setae *I. nitidula* Zetterstedt
- 16 Postpedicel short, about 2.5 times as long as wide (Fig. 2B). Scutellum with 5–6 pairs of setae. Smaller, with wing length about 2.5 mm *I. pumila* **sp. nov.**
- Postpedicel long, about 4.0 times as long as wide. Scutellum with at least 7–8 pairs of setae. Larger, with wing length at least about 3.5 mm 17
- 17 Halter pale, whitish to yellow 18
- Halter dark 19
- 18 Dorsocentral setae multiserial anteriorly *I. nepalensis* **sp. nov.**
- Dorsocentral setae uniserial throughout *I. chvalai* **sp. nov.**
- 19 Clouding about veins; R_{4+5} usually branched at or proximal to end of R_{2+3} (Fig. 2A). Katepisternum greyish pollinose; scutum viewed dorsally yellowish brown, viewed anteriorly narrowly brownish down acrostichal and dorsocentrals *I. macquarti* Zetterstedt

- No distinct clouding about veins; R_{4+5} usually branched at or distal to end of R_{2+3} ; Katepisternum with shiny or polished spot on middle; scutum viewed dorsally dark brown, viewed anteriorly more greyish but with broad dark brown vitta down across-chinals and similar narrow vitta down dorsocentrals *I. orchestris* Melander

Key to species of *Iteaphila* from the Nearctic Region

- 1 Acrostichal setulae biserial at apex of scutum, forming only two distinct rows. 2
- Acrostichal setulae at least 4-serial at apex of scutum, sometimes paired row in two more widely separated rows 15
- 2 Anepisternum and anepimeron mostly bare and shining. Male terminalia subrectangular, greatly extended horizontally, longer than final three abdominal segments; epandrium expanded apically (Fig. 8B) *I. nitidula* Zetterstedt
- Anepisternum and anepimeron finely pollinose. Male terminalia subtriangular, not extended horizontally, much shorter than final three abdominal segments; epandrium more or less pointed apically (Figs. 6A, 11C) 3
- 3 Thorax (incl. scutellum) clothed with pale setae. Abdominal setae also pale *I. vetula* Melander
- Thorax (incl. scutellum) and usually abdomen covered with dark setae 4
- 4 Males (holoptic) 5
- Females (dichoptic) (Unknown for *I. californica*, *I. cirrata*, *I. falcata*, *I. sicamous*) 12
- 5 Oblique hypoproct process absent (Figs. 4A, B, 11C, 13B) 6
- Oblique hypoproct process present, from very short to elongate (Figs. 4D, 6F, 8D) 9
- 6 Proboscis very long and slender, at least 1.5 times as long as head height 7
- Proboscis shorter or only slightly longer than head height 8
- 7 Apex of phallus broad, wider than postgonite with apex upturned; hypandrium with tuft of stout black setae (Fig. 13B)
- Apex of phallus slender, parallel-sided, subequal in length to postgonite; hypandrium with setae even distributed not concentrated in a tuft (Fig. 11C) *I. triangula* (Coquillett)
- 8 Epandrium quadrate, apical third tapered with broad rounded apex; hypandrium with short setae, not longer than width of the sclerite (Fig. 4A) *I. bulbosa* Sinclair **sp. nov.**
- Epandrium round, apical half strongly narrowed, tapered to slender surstylus; hypandrium with several long setae, longer than width of sclerite (Fig. 4B) *I. californica* Sinclair **sp. nov.**
- 9 Postpedicel short, about 2–2.5 times as long as wide (Fig. 2B). Proboscis little longer than antennae. Apex of phallus gently curved and rounded tip (Fig. 8D) *I. pumila* Sinclair **sp. nov.**
- Postpedicel long, at least 3 times as long as wide. Proboscis longer than antennae. Apex of phallus sickle-shaped and pointed. 10
- 10 Phallus very long and coiled; epandrium with smooth, bare projecting surstylus (Fig. 4D) *I. cirrata* Shamshev **sp. nov.**
- Phallus not long and coiled; epandrium without smooth, bare projecting surstylus (Fig. 6A, 13A) 11
- 11 Hypoproct process long and slender, projecting free from cercus; epandrium broad, only slightly narrowed posterior (Fig. 6A) *I. falcata* Sinclair **sp. nov.**
- Hypoproct process very short, only slightly projecting free from cercus; epandrium greatly narrowed and cylindrical on posterior half (Fig. 13A) *I. testacea* Melander
- 12 Proboscis very long and slender, at least 1.5 times as long as head height. Yellow coloured females with 10 or more than scutellar setae *I. triangula* (Coquillett)
- Proboscis shorter or only slightly longer than postpedicel. Yellow coloured females with 10 or fewer scutellar bristles 13
- 13 Scutum with dense grey pollinosity when viewed anteriorly or laterally; scutellar bristles brownish not black
- Scutum either yellow or slight grey pollinosity; scutellar bristles black 14
- 14 Body often entirely yellow (Fig. 2E), in dark forms abdomen and legs somewhat paler than thorax and “knees” usually pale. Postpedicel long, at least 3 times as long as wide *I. testacea* Melander
- Body dark, including legs and abdomen. Postpedicel short, about 2–2.5 times as long as wide *I. pumila* Sinclair **sp. nov.**
- 15 Dorsum of scutum with only minute setae in both sexes; paired rows of acrostichal setulae separated by length of setulae. Male hypoproct process very short, slightly longer than basal width (Fig. 6F); female wing lacking veins lacking clouding
- Dorsum of scutum with abundant and long setae in male; paired rows of acrostichal setulae separated by one-quarter to one-half length of setulae. Male hypoproct process long and slender, at least 4 times longer than basal width (Figs. 6A, 11C); female wing veins with or without clouding 16
- 16 R_{4+5} branched at or distal to end of R_{2+3} ; female wing lacking clouding about veins. Katepisternum with shiny or polished spot on middle *I. orchestris* Melander
- R_{4+5} branched proximal to end of R_{2+3} ; female wing with clouding about veins (Fig. 2A). Katepisternum greyish pollinose *I. macquarti* Zetterstedt

TABLE 1. List of flowers visited by *Iteaphila*

Taxon	Plant family	Common name	<i>Iteaphila</i> species	Reference
<i>Amelanchier canadensis</i> (L.) Medik.	Rosaceae	Swamp serviceberry	<i>I. nitidula</i>	Present study (label data)
<i>Amelanchier utahensis</i> Koehne	Rosaceae	serviceberry	<i>I. vetula</i>	Present study (pers. obs.)
<i>Arctostaphylos</i> sp.	Ericaceae	Manzanita	<i>I. californica</i>	Present study (label data)
<i>Argentina anserine</i> (L.) Rydb.	Rosaceae	silverweed	<i>I. nitidula</i>	Present study
<i>Aruncus dioicus</i> (Walter) Fernald	Rosaceae	bride's feathers	<i>I. macquarti</i>	Present study (label data)
<i>Ceanothus</i> sp.	Rhamnaceae	White ceanothus	<i>I. napaea; orchestris</i>	Present study (label data)
<i>Coptis asplenifolia</i> Salisb.	Ranunculaceae	fern-leaf goldthread	<i>Iteaphila</i> sp.	Willson & Anderson (2007)
<i>Cornus sericea</i> L.	Cornaceae	Red osier dogwood	<i>I. napaea</i>	Present study (label data)
<i>Fragaria virginiana</i> Duchesne	Rosaceae	virginia strawberry	<i>Iteaphila</i> sp.	Marshall (2006, p. 461)
<i>Heracleum maximum</i> Bartram	Apiaceae	Cow parsnip	<i>I. macquarti; napaea; nitidula</i>	Present study (label data)
<i>Lomatium orogenoides</i>	Apiaceae		<i>I. nitidula</i>	Present study (label data)
<i>Dryas</i> sp.	Rosaceae		<i>I. pumila</i>	Present study (label data)
<i>Potentilla anserina</i> (Rydb.)	Rosaceae	cinquefoil	<i>I. nitidula</i>	Present study (label data)
<i>Potentilla diversifolia</i> Lehm.	Rosaceae	cinquefoil	<i>I. orchestris</i>	Present study (label data)
<i>Prunus padus</i> L.	Rosaceae	cherry/plum	<i>I. furcata; macquarti; nitidula</i>	Tuomikoski (1952)
<i>Prunus</i> sp.	Rosaceae	cherry	<i>I. californica</i>	Present study (label data)
<i>Rhamnus alnus</i> Mill.	Rhamnaceae	Alder buckthorn	<i>I. furcata</i>	Tuomikoski (1952)
<i>Rhododendron groenlandicum</i> (Oeder) Kron & Judd	Ericaceae	Bog Labrador tea	<i>I. napaea; nitidula; orchestris; testacea</i>	Present study (label data)
<i>Rhododendron tomentosum</i> Harmaja	Ericaceae	marsh labrador tea	<i>I. macquarti</i>	Tuomikoski (1952)
<i>Ribes montignum</i> McClatchie	Grossulariaceae	gooseberry	<i>I. nitidula</i>	Present study (label data)
<i>Salix</i> spp.	Salicaceae	willow	<i>I. macquarti; nitidula</i>	Tuomikoski (1952)
<i>Shephardia</i> sp.	Elaeagnaceae	buffaloberry	<i>I. macquarti; nitidula</i>	Present study (label data; photo)
<i>Stellaria</i> sp.	Caryophyllaceae	stitchwort	<i>I. nitidula</i>	Present study (label data)
<i>Vaccinium</i> sp.	Ericaceae	Blueberry, anberry	<i>I. testacea</i>	Present study (label data)

Feeding habits

Adults have been observed and collected primarily on flowers of willow (*Salix*), but also known from a number of other early spring flowering plants (Table 1, Tuomikoski 1952). Anecdotal observations suggest that *Iteaphila* is one of the most important visitors of willows in northern Finland (Tuomikoski 1952). It is most likely species of *Iteaphila* are exploiting chiefly any yellow or white flowers available at this early season and could be viewed as important pollinators in alpine and northern latitudes. Many of the plant records presented in Table 1 are taken from the above label data. The relatively long, obliquely projecting mouthparts are ideally adapted to flower feeding. In contrast to the Empidini, *Iteaphila* appears to be exclusively anthophilous and never predaceous (Tuomikoski 1952), and has been referred to as obligate pollen feeders (Grimaldi 1999). We know of only one pollination study where this genus has been identified (i.e., Willson & Anderson 2007). Sinclair & Cumming (2006) discussed and summarized the feeding habits of the Empidoidea, including listing several other apparently obligate flower visiting genera.

Antony Downes made several feeding observations on *Iteaphila*, but they were never published. He reported his observations in 1990 at the 2nd International Congress of Dipterology, but his abstract was not included in the abstract volume and a copy was distributed during the meetings (Downes 1990). Additional data are found in his field notes and written observations archived in the Diptera Section in the CNC, with codes coinciding with voucher specimens. He observed females of *I. macquarti*, *I. nitidula* and *I. napaea* feeding on willow pollen, which he described as being manipulated by the labellum and passed whole to the crop and midgut, along with nectar. Downes did not observe pollen in the gut of males and assumed that they were only nectar feeders. *Iteaphila* lack epipharyngeal blades (Sinclair & Cumming 2006, fig. 55) and result in pollen grains being consumed whole and not cut-up. In contrast, epipharyngeal blades are used to cut-up pollen during feeding by species of *Anthalia* Zetterstedt (Hybotidae: Empidoidea) (Downes 1990).

Species groups of *Iteaphila*

The currently recognized species of *Iteaphila* in the Palearctic and Nearctic regions are listed in Tables 2 and 3, including general distribution. These species are divided into the following five monophyletic subgroups:

macquarti subgroup. This group is defined on the basis of the following synapomorphy: long setae on apical section of the postgonites (Figs. 6E, F, 11D). The following species are included in this subgroup and apart from the Holarctic species *I. macquarti*, species are confined to eastern Palearctic and the western Nearctic: *macquarti*, *napaea*, *orchestris*, *taiwanensis* and *vetula*.

nepalensis subgroup. This group is defined on the basis of the following synapomorphies: phallus with apex sickle-shaped; sometimes the apex of the postgonites is clothed with teeth-like projections (Figs. 8A, 11A, B). The following species are included in this subgroup, which occurs in eastern Asia and the Nearctic: *nepalensis*, *rasnitsyni*, *saigusai*, and possibly *falcata* and *testacea*.

nitidula subgroup. This group is defined on the basis of the following synapomorphy: long, arched or coiled phallus (Figs. 4D, 6D, 8B). The following species are included in this subgroup: *cirrata* (western North America), *furcata* (Europe) and *nitidula* (Holarctic).

pumila subgroup. This group is defined on the basis of the following synapomorphies: apex of phallus short and rounded; postgonites usually with teeth-like projection along anterior margin (Figs. 4A, 8D) (*bulbosa*, *pumila*), usually shortened cercus and stout hypoproct (though not digitiform) (Fig. 4B) (*bulbosa* and *californica*). The following species are included in this subgroup: *bulbosa*, *californica* (both western North America) and *pumila* (mostly Beringian).

triangula subgroup. This group is defined on the basis of the following synapomorphies: unique shape of male cercus (Figs. 4C, 11C, 13C); very long proboscis. The following species are included in this subgroup, which occur in western North America and central Asia: *chvalai*, *sicamous* and *triangula*.

TABLE 2. List of species of *Iteaphila* from the Nearctic Region.

Species group	Distribution
<i>Iteaphila macquarti</i> group	
<i>I. bulbosa</i> Sinclair	western North America
<i>I. californica</i> Sinclair	USA (California)
<i>I. cirrata</i> Shamshev	Canada (British Columbia), Russian Far East
<i>I. falcata</i> Sinclair	Canada (British Columbia)
<i>I. macquarti</i> Zetterstedt	Holarctic
<i>I. napaea</i> Melander	western North America
<i>I. nitidula</i> Zetterstedt	Holarctic
<i>I. orchestris</i> Melander	western North America, Japan, Taiwan
<i>I. pumila</i> Sinclair	Russian Far East (Magadan), northwestern North America
<i>I. sicamous</i> Sinclair	Canada (British Columbia)
<i>I. testacea</i> Melander	transcontinental North America
<i>I. triangula</i> (Coquillett)	western North America
<i>I. vetula</i> Melander	western North America
Nomen dubium (doubtful species in <i>Iteaphila</i>)	
<i>Empis luctosa</i> Kirby	Northwestern Canada

TABLE 3. List of species of *Iteaphila* from the Palaearctic and Oriental regions

Species group	Distribution
<i>Iteaphila setosa</i> group	
<i>I. arundela</i> Shamshev and Sinclair	England
<i>I. caucasica</i> Shamshev and Sinclair	Caucasus
<i>I. italica</i> Loew	Europe
<i>I. kubaniensis</i> Shamshev and Sinclair	Caucasus
<i>I. merzi</i> Shamshev and Sinclair	Asia (Uzbekistan), Europe (Cyprus)
<i>I. setosa</i> (Bezzi)	Europe
<i>Iteaphila macquarti</i> group	
<i>I. chvalai</i> Shamshev	Kazakhstan
<i>I. cirrata</i> Shamshev	Russian Far East, Canada (British Columbia)
<i>I. furcata</i> (Zetterstedt)	Europe, Russian Far East (Khabarovsk Territory)
<i>I. macquarti</i> Zetterstedt	Holarctic
<i>I. nepalensis</i> Shamshev	Nepal
<i>I. nitidula</i> Zetterstedt	Holarctic
<i>I. orchestris</i> Melander	Japan, Taiwan, western North America
<i>I. taiwanensis</i> Shamshev	Taiwan
<i>I. saigusai</i> Shamshev	Japan
<i>I. pumila</i> Sinclair	Russian Far East (Magadan), northwestern North America
<i>I. rasnitsyni</i> Shamshev	Russian Far East (south Primorsk Territory)
Nomen dubium (unrecognized species in <i>Iteaphila</i>)	
<i>I. maackii</i> Loew	East Siberia

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