

**A REVIEW OF TWO NEARCTIC SPECIES OF THE SHORE-FLY GENUS
PHILYGRIA STENHAMMAR: *P. DEBILIS* LOEW AND *P. NIGRESCENS*
(CRESSON) (DIPTERA: EPHYDRIDAE)**

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Abstract.—Two species of the shore-fly genus *Philygria* Stenhammar, *P. debilis* Loew and *P. nigrescens* (Cresson), are reviewed to reassess their taxonomic status, which was recently questioned by Hollmann-Schirmacher. Both species are distinct, and evidence is presented to support their revised status. For perspective and to facilitate their identification, the appropriate subfamily, tribe, genus, and species are diagnosed and keys to the genera of the tribe Hyadinini and to the Nearctic species of *Philygria* are presented. Lectotypes, as appropriate, are designated.

Key Words: review, Diptera, Ephydridae, Ilytheinae, Hyadinini, shore flies, *Philygria debilis*, *P. nigrescens*, lectotype designations

This paper is an analysis of the taxonomic status of two Nearctic shore-fly species: *Philygria debilis* Loew and *P. nigrescens* (Cresson). *Philygria* was recently revised on a world basis (Hollmann-Schirmacher 1998), and among the 39 species that were included, four (*P. debilis*, *P. dimidiata* (Sturtevant and Wheeler), *P. longicornis* (Sturtevant and Wheeler), and *P. punctatonervosa* (Fallén)) occur in the Nearctic Region. Hollmann-Schirmacher (1998) also included *Philygria picta* (Fallén) in his revision as a fifth Nearctic species, but our study of this species suggests that it be included in *Nostima* Coquillett, a genus we consider to be separate from *Philygria* (Edmiston and Mathis 2004).

Most Nearctic species of *Philygria* are relatively uncommon in collections and perhaps in nature. For example, in the USNM collection, Nearctic species of *Philygria* are represented with the following numbers of

specimens: *P. dimidiata* (1), *P. longicornis* (1), *P. nigrescens* (17), *P. punctatonervosa* (96), and *P. debilis* (over 1,000). The exceptional number of *P. debilis* in research collections supports other observations that this species is one of the most common shore flies in temperate North America, probably occurring in most urban lawns (Cresson 1944, Scheiring and Foote 1973, Zack 1998). Although common and sometimes abundant, the taxonomic status of this species and *P. nigrescens* is unclear and was recently questioned (Hollmann-Schirmacher 1998). Hollmann-Schirmacher (1998) considered both species to be conspecific and their names to be senior and junior synonyms respectively.

Cresson (1930b) described *Hydrina nigrescens* from specimens collected in London Hill Mine near Bear Lake, British Columbia. He wrote (1930b: 80) that his new species was "... very similar to *Philygria*

debilis Loew, but more blackish, not so brownish; frons much longer, about six-tenths as long as broad; cheeks broader; abdomen mostly shining; at most the second costal section one and one-half as long as third." Wirth and Stone (1956) subsequently resolved the generic nomenclature of this species when they transferred some species of the genus *Hydrina* Robineau-Desvoidy, including *N. nigrescens*, into *Philygria*.

In his revision of *Philygria*, Hollmann-Schirmacher (1998: 71) wrote that the characters Cresson used to describe *P. nigrescens* (body color, genal size, radial vein indices) were "within the variability" of *Philygria debilis*, and noted further that he could not detect any differences in structures of the male terminalia. In his "Discussion" section to that species, he concluded and wrote that (1998: 71): "The name *Philygria nigrescens* is therefore a junior synonym to *P. debilis*." Evidently, Hollmann-Schirmacher did examine the holotype of *P. nigrescens*, as the label data from the type locality were cited, but there is no indication that any other specimens were examined. For example, the label data from Alaskan specimens in the USNM were not included in his revision. He did write, however, that a darker variety of *Philygria debilis* did occur in the northern locations of British Columbia and Alaska (Hollmann-Schirmacher 1998).

In August of 2002 and 2003, the second author collected *Philygria* in the Matanuska-Susitna Borough of Alaska, in or near the village of Talkeetna. Some specimens appeared to be distinct from the commonly collected *P. debilis*, and that observation prompted this review of *P. debilis* and *P. nigrescens*. As part of our study, the pertinent primary types were examined, structures of adults, including those of the male terminalia, were studied and described, new specimens were examined, and considerable evidence was found to distinguish between *P. debilis* and *P. nigrescens*. To provide a broader context for this paper and also to facilitate the identification of *Phil-*

ygria and its included Nearctic species, we have provided brief diagnoses for the subfamily Ilytheinae and tribe Hyadinini and keys to the genera of Ilytheinae and Nearctic species of *Philygria*.

Unlike most shore flies, adults of *Philygria*, including the two species that are being reviewed here, occur more commonly in somewhat dry, grassy habitats that are not immediately associated with aquatic habitats. Zack (1979:85) collected many *P. debilis* from the flowers of *Anaphalis margaritacea* (L.) Benth and Hook (Asteraceae) in a habitat he described as being located at "considerable distances from permanent water sources." The larvae of *Philygria* are closely linked with habitats where blue-green algae are abundant, and small patches of blue-green algae can almost always be found growing on the soil's surface in grassy habitats. Larvae feeding on blue-green algae are typical for many taxa in the subfamily Ilytheinae (Foote 1995).

MATERIALS AND METHODS

The descriptive terminology, with the exceptions noted in Mathis (1986), and Mathis and Zatwarnicki (1990a), and below, follows that published in the *Manual of Nearctic Diptera* (McAlpine 1981). We have followed the terminology for most structures of the male genitalia that other workers in Ephydriidae have used (see references in Mathis 1986, Mathis and Zatwarnicki 1990a, 1990b), such as surstylus. Zatwarnicki (1996) has suggested that the pre- and postsurstylus correspond with the pre- and postgonostylus and that the subepandrial plate is the same as the medandrium. Alternative spellings for some localities are cited in parentheses, especially for locality names that were transliterated into English. The species descriptions are composite and not based solely on the holotypes.

Label data from each specimen were recorded and are listed alphabetically according to country, state or province, county, and specific locality, such as city. As available, dates of collection, collector, sex, and

specimen deposition are listed. Label data from primary type specimens are recorded verbatim, and clarifying information, such as script style and label color, is enclosed within brackets.

Although most specimens are in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), we also studied numerous specimens from the following collections: Academy of Natural Sciences of Philadelphia (ANSP), Philadelphia, Pennsylvania, and the Museum of Comparative Zoology (MCZ), Harvard University, Cambridge, Massachusetts.

Distribution maps were made using ESRI ArcView© GIS 3.2. Longitude and latitude coordinates were obtained for the locality where each specimen was collected. If available, the longitude and latitude were obtained directly from the specimen labels. For specimen labels that did not have longitude and latitude, gazetteers and maps were used to determine the geographical coordinates. The geographic coordinates were entered into ESRI ArcView tables. The specimen locales were plotted on a world land projection, presented within ESRI ArcView layouts and exported as encapsulated postscript (EPS) files.

External morphological structures were observed and recorded using a dissecting microscope. Continuous characters were measured using a calibrated ocular micrometer attached to either a compound or dissecting microscope. Quantitative characters used commonly in the descriptions are defined as:

1. Body length: maximum distance in lateral view from anterior margin of head to posterior abdominal apex.
2. Scutal length: maximum straight-line distance in dorsal view from the anterior margin of the scutum to the scutum-scutellar suture.
3. Scutellar length: maximum straight-line distance in dorsal view from the scutellar suture to the posterior margin of the scutellum.

lar suture to the posterior margin of the scutellum.

4. Costal vein ratio: straight-line distance between the apices of veins R_{2+3} and R_{4+5} /distance between the apices of veins R_1 and R_{2+3} .
5. M vein ratio: straight-line distance along vein M between crossvein dm-cu and r-m/distance apicad of crossvein dm-cu.

Dissections of male and female genitalia and descriptions were performed using the method of Clausen and Cook (1971) and Grimaldi (1987). Microforceps were used to remove abdomens, which were macerated in a potassium hydroxide solution. Cleared terminalia were rinsed in distilled water and 70% ethanol and then transferred to glycerin for observation. If necessary for proper orientation, the specimen was transferred from glycerin to glycerine jelly. The glycerin jelly was heated, and the specimen appropriately oriented. After cooling, the embedded specimen in glycerin jelly became immobilized. Abdomens were placed in an attached plastic microvial filled with glycerin and attached to the pin supporting the remainder of the insect from which it was removed.

External morphological characters were drawn using an ocular grid attached to a stereoscopic dissecting microscope. Internal genitalic features were drawn using a camera lucida with a Wild M-400 compound microscope and corroborated with views from a Nikon SMZ-1500 dissecting microscope.

SYSTEMATICS

Subfamily Ilytheinae Cresson

Ilytheinae Cresson 1943: 2 (as the tribe Ilytheini). Type genus: *Ilythea* Haliday in Curtis 1837.—Zatwarnicki 1992: 89 [diagnosis, classification, phylogeny].—Mathis and Zatwarnicki 1995: 186–214 [world catalog].—Hollmann-Schirmacher 1998: 17–44 [classification, phylogeny].

Diagnosis.—Adult. *Head*: Fronto-orbital setae proclinate and reclinate if present, frequently one or both setae absent. Face protruding with large oral opening (Ilytheini) or moderately protruding, often carinate (Hyadinini). Spinellike seta on pedicel inconspicuous.

Thorax: Insertion of posterior notopleural seta moderately to conspicuously elevated, especially compared to anterior seta; presutural (sometimes sutural) dorsocentral setae present or absent.

Abdomen: Male terminalia: Surstylus usually fused with ventral margin of epanthrium, often indistinguishably; subepandrial plate usually fused with hypandrium and/or gonites, sometimes reduced to a remnant or forming a gonial arch; phallapodeme triangular in lateral view; ejaculatory apodeme present or secondarily absent; pre- and postgonite fused into a single gonite. Female genitalia: Extending process of female ventral receptacle sinuous, lacking an operculum.

Larva.—Anterior spiracle divided into 2 basal, elongate branches.

KEY TO GENERA OF ILYTHEINAE CRESSON

- 1. Posterior notopleural seta inserted near ventral margin of notopleuron and at about same level as anterior seta 2
 - Posterior notopleural seta inserted at conspicuously higher level than anterior seta 10
- 2. Vein R_{2+3} short, costal section II about $\frac{1}{3}$ length of III, and with a stump vein. A single, proclinate, fronto-orbital seta
 - *Parydroptera* Collin
 - Vein R_{2+3} long, costal section II at least half section III, lacking a stump vein. Usually a reclinate and proclinate fronto-orbital seta 3
- 3. Costa short, extended at most to slightly beyond vein R_{4+5} . Tergite 4 at least $3\times$ length of tergite 5 *Axysta* Haliday
 - Costa long, extended to vein M. Tergite 4 at most twice length of tergite 5 4
- 4. Wing with vein R_{2+3} long; costal II section nearly $3\times$ length of III. Face flat or weakly carinate, not prominent medially. Flagellomere 1 rounded at apex above 5
 - Wing with vein R_{2+3} short; costal section II less than twice length of III. Face with low conical medial prominence. Flagellomere 1 usually angulate at apex above 8

- 5. Both inner and outer vertical setae well developed; fronto-orbital setae usually moderately well to well developed, laterocline (Holarctic) *Pelina* Haliday
 - Only inner vertical seta present, outer seta lacking; lacking well-developed fronto-orbital setae (Neotropical; genus *Pelinoides* Cresson) 6
- 6. Femora and palpus yellow to yellowish red; arista with dorsal rays, length of rays subequal to basal arisal width; eye height about twice genal height the *pallipes* group
 - Femora and palpus black or dark colored; arista mostly bare, if short hairs present, these shorter than basal arisal width; eye height only slightly longer than genal height, sometimes smaller 7
- 7. Tergite 4 bare, shiny, enlarged, length subequal to combined length of 2nd and 3rd tergites the *cyclocerus* group
 - Tergite 4 microtomentose, appearing dull, at most subshiny, length only slightly longer than 3rd the *sulcatus* group
- 8. Tergite 4 $1.3-2\times$ length of tergite 5, both conspicuously punctate. Inner vertical seta present, outer vertical seta absent. Lateral margin of scutellum not densely microtomentose, not appearing velvety *Lytogaster* Becker
 - Tergite 4 subequal in length to tergite 5, neither conspicuously punctate. Usually both vertical setae present, if outer absent then lateral margin of scutellum densely microtomentose, appearing velvety 9
- 9. Dorsocentral seta 1. Lacking well-developed fronto-orbital setae *Hyadina* Haliday
 - Dorsocentral setae 2. One well-developed fronto-orbital seta
 - *Parahyadina* Tonnoir and Malloch
- 10. Fronto-orbital setae either laterocline and inconspicuous or lacking; prescutellar acrostichal setae lacking 11
 - Fronto-orbital setae conspicuous, well developed, mostly reclinate or proclinate or both; prescutellar acrostichal setae present, well developed (Ilytheini Cresson) 13
- 11. Outer vertical seta lacking; fronto-orbital setae lacking *Garifuna* Mathis
 - Both inner and outer vertical setae usually present; fronto-orbital seta present, sometimes reduced 12
- 12. Arista bare or minutely branched; 2 rows of facial setae. Presutural or sutural dorsocentral seta present *Philygria* Stenhammar
 - Arista with short to long branches; 1 row of facial setae. Presutural or sutural dorsocentral seta lacking *Nostima* Coquillett
- 13. Dorsocentral setae 3 (1+2) *Donaceus* Cresson
 - Dorsocentral setae 2 (1+1) 14

14. Vein R_{2+3} long, subparallel to C; costal section II over twice section III . . . *Ilythea* Haliday
 – Vein R_{2+3} short, running almost straight to C; costal section II subequal to section III
 *Zeros* Cresson

Tribe Hyadinini Phillips et al.

Hydrinini Cresson 1944: 175. Type genus: *Hydrina* of authors, not Robineau-Desvoidy 1830 (= *Philygria* Stenhammar 1844), unavailable, based on a junior homonym.

Hyadinini Phillips et al. in Cresson 1949: 251. Type genus: *Hyadina* Haliday in Curtis, 1837.—Hollmann-Schirmacher 1998: 29, 45–56 [discussion].

Philygriini [nomen nudum].—Wirth and Stone 1956: 469.—Wirth 1965: 745 [Nearctic catalog]; 1968: 16 [Neotropical catalog].—Cogan and Wirth 1977: 335 [Oriental catalog].—Cogan 1980: 666 [Afrotropical catalog]; 1984: 149 [Palearctic catalog].

Philygriini Lizarralde de Grosso 1989: 51. Type genus: *Philygria* Stenhammar 1844.—Mathis and Zatwarnicki 1995: 190–200 [world catalog].—Hollmann-Schirmacher 1998: 50 [synonymy with Hyadinini].

Diagnosis.—This tribe is similar to Ilytheini but is distinguished by the following combination of characters: Arisetal branches usually reduced; acrostichal setae reduced, prescutellar pair lacking; dorsocentral setae frequently reduced in size and/or number (1+2, 0+2, or sutural+1); subepandrial plate fused with gonite dorsally, forming a rounded projection, sometimes joined medially over aedeagus to form a gonial arch; gonites and hypandrium usually fused; and gonite produced posteriorly as a long triangular to almost parallel sided projection, with apex variously modified.

Genus *Philygria* Stenhammar

Philygria Stenhammar 1844: 154 (as “Sectio 4” of *Notiphila*). Type species: *Notiphila flavipes* Fallén 1823, by subsequent designation (Coquillett 1910: 588).—

Loew 1860: 24 [generic status].—Froese 1993: 89–96 [immature stages].

Cressoniella Saether 1970: 107. Type species: *Cressoniella montana* Saether 1970 (= *Philygria debilis* Loew 1861), by monotypy [preoccupied, Mitchell 1934 (Hymenoptera)].—Mathis and Wirth 1977: 520 [synonymy].

Hydrina of authors, not Robineau-Desvoidy 1830 [misidentification]: Cresson 1930a: 93–100 [review]; 1944: 177 [review of Nearctic fauna].—Sturtevant and Wheeler 1954: 237–239 [review of Nearctic fauna].

Pseudohyadina Clausen 1983: 224. Type species: *Hyadina longicornis* Sturtevant and Wheeler 1954, by original designation.—Hollmann-Schirmacher 1998: 58 [synonymy].

Philhygria, error for *Philygria*.

Description.—Minute to small shore flies, body length 0.75–2.20 mm.

Head: Frons wider than high; ocellar setae well developed, 1 pair, divergent, proclinate; pseudopostocellar setae minute, divergent, proclinate; both inner and outer vertical setae usually well developed, outer seta shorter than inner seta, rarely absent; fronto-orbital setae small, 3–5, proclinate. Antenna with segments often darker on dorsum; arista appearing essentially bare, bearing numerous, minute, dorsal branches, length of branches less than basal arisetal width. Face generally paler than frons; facial setae small, in 2 rows on shiny strip medially along parafacial, lateral row laterocline and $\frac{2}{3}$ length of medial row, medial row mediocline; dorsal facial seta longest, setae ventrad decreasing in length; genal seta minute, numerous smaller setulae. Eye round to oval. Palpus prominent, varying from yellow to dark brown.

Thorax: Scutellum trapezoidal, with posterior apex slightly rounded; chaetotaxy as follows: Dorsocentral setae 3 (1+2), anterior seta smaller than posterior setae, sometimes sutural, with 3–5 presutural setulae; acrostichal setae in 1 row; postsutural su-

pra-alar seta 1; lateral scutellar setae usually 2, rarely lateral seta absent, lateral seta shorter than apical seta; notopleural setae 2, posterior seta longer and inserted at position above level of anterior seta; anepisternal seta 1, small, inserted along posterior margin, with many dorsal setulae; katepisternal seta 1. Wing usually mostly hyaline to faintly infusate, sometimes with distinct maculation pattern; crossveins sometimes white or black; generally lacking spurious veins. Legs yellow to dark brown; femora and tibiae often banded; tarsi usually yellowish, apical 1–2 tarsomeres darker. Halter whitish yellow to brownish yellow.

Abdomen: Male and female tergites with many setae and setulae. Male terminalia as follows: epandrium reduced, often absent; cerci present, sometimes fused to epandrium; epandrium and surstylus fused, bearing row of large setulae; lacking surstyler projections; phallapodeme triangular in lateral view; aedeagus variously sclerotized, often divided into basiphallus, mediophallus, and distiphallus with various projections; pre- and postgonites distinct.

Discussion.—Hollmann-Schirmacher (1998) recently treated the genus *Nostima* as a junior synonym of *Philygria*, which he then divided into four species groups. Hollmann-Schirmacher (1998) recognized a broader concept of *Philygria* and diagnosed its species groups almost exclusively by structures of the male terminalia. He further proposed the synonymy of *Nostima* with *Philygria* according to a hypothetical development of setae and projections on the gonite-hypandrium complex. Emphasis solely on genital characters, however, is problematic because divergence of external characters in extant species does not always correlate well with divergence of genitalic characters. Furthermore, his phylogenetic consideration of *Nostima* was limited to two exemplars, *N. picta* (Fallén) and *N. flavitarsis* Canzoneri and Meneghini, and he did not consider updates after 1993, such as description of the closely related genus *Garifuna* (Mathis 1997).

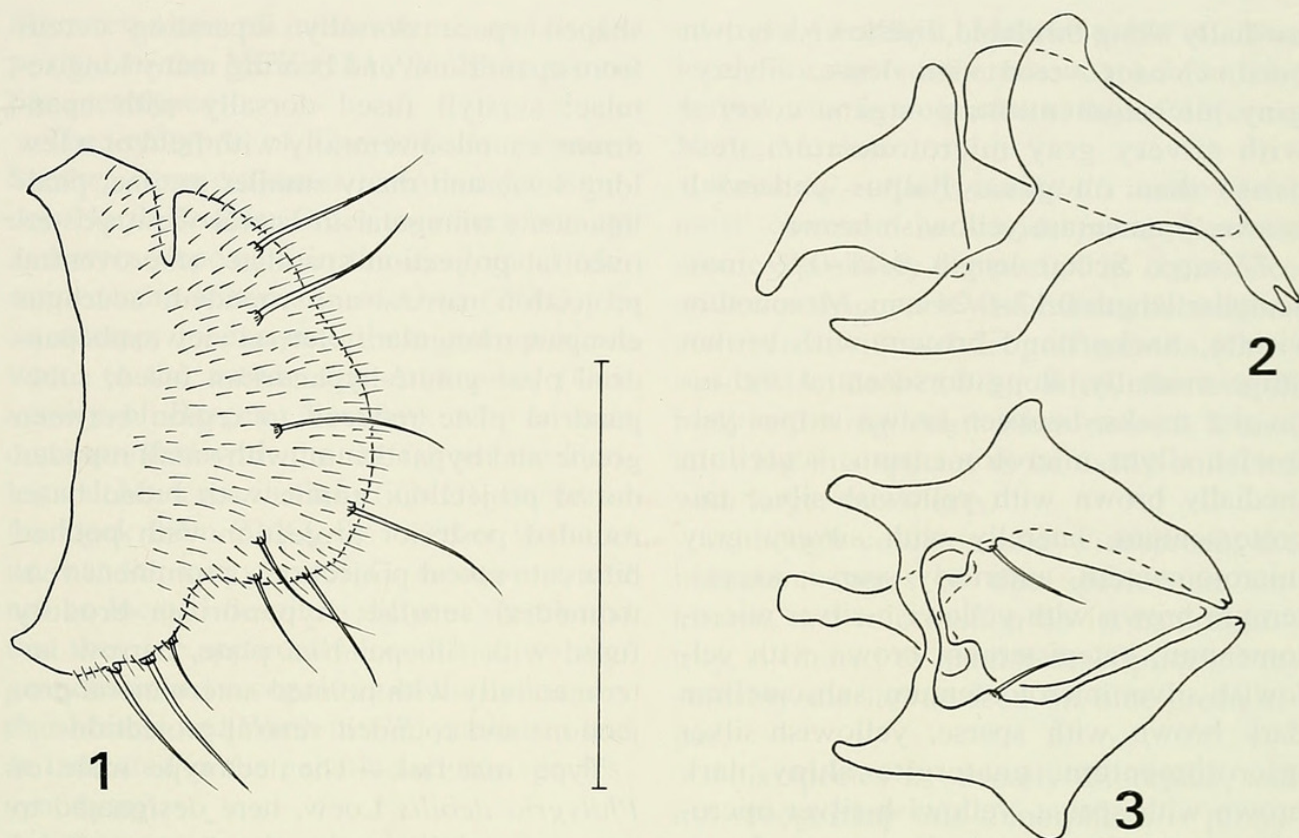
Our analysis, which included a wider sampling of characters and species from *Philygria*, *Nostima*, and *Garifuna*, resulted in a classification that only partially adheres to Hollmann-Schirmacher's concept of *Philygria* (we exclude his *picta* and *flavitarsis* groups), and we recognize *Nostima* and *Garifuna* as separate genera (Edmiston and Mathis 2004).

KEY TO NORTH AMERICAN SPECIES OF *PHILYGRIA* STENHAMMAR

1. Wing hyaline, except for spot over cross veins 4
 - Wing spotted 2
2. Wing with spurious vein(s) 3
 - Wing without spurious veins
 - *P. longicornis* (Sturtevant and Wheeler)
3. Single spurious vein projected from vein CuA₁
 - *P. dimidiata* (Sturtevant and Wheeler)
 - Many spurious veins projected from veins R₂₊₃ and R₄₊₅ *P. punctatonervosa* (Fallén)
4. Abdominal tergites 1–3 with dense microtomentum. Parafacial area yellowish brown
 - *P. debilis* Loew
 - Abdominal tergites 1–3 shiny, dark brown with sparse microtomentum. Parafacial area dark brown *P. nigrescens* (Cresson)

Philygria debilis Loew (Figs. 1–3)

Philygria debilis Loew 1861: 357.—Osten Sacken 1878: 202 [Nearctic catalog].—Aldrich 1905: 627 [Nearctic catalog].—Jones 1906: 187 [list].—Johnson 1925: 273 [list, Maine, New Hampshire, Vermont].—Wirth and Stone 1956: 469 [California].—Deonier 1965: 501 [biology].—Wirth 1965: 745 [Nearctic catalog].—Cole 1969: 400 [western United States].—Scheiring and Foote 1973: 160 [habitat in Ohio].—Zack 1979: 93 [list, Washington, natural history]; 1983: 216 [list, Washington]; 1998: 136 [list, Washington, natural history].—Steinly 1984: 753–754 [biology]; 1990: 188–193 [biology].—Mathis and Zatwarnicki 1995: 195 [world catalog].—Hollmann-Schirmacher 1998: 66–71 [revision].
Hydrina debilis: Slosson 1902: 8 [generic combination].—Cresson 1944: 177 [re-



Figs. 1–3. Structures of the male terminalia of *Philygria debilis* (Virginia: Westmoreland: Westmoreland State Park and Utah: Goshen Hot Springs (39°57.8'N, 112°51.2'W)). 1, Epandrium, cerci, and surstylus, lateral view. 2, Phallapodeme, aedeagus, and gonites, lateral view. 3, Same, ventral view. Scale bar = 0.1 mm.

view].—Sturtevant and Wheeler 1954: 237–238 [review].

Philygria fuscicornis Loew 1862: 155.—

Johnson 1925: 273 [synonymy].

Hydrina fuscicornis: Slosson 1902: 8 [generic combination].

Cressoniella montana Saether 1970: 107.—

Mathis and Wirth 1977: 520 [synonymy].

Diagnosis.—This species is distinguished from Nearctic congeners by the following combination of external characters: Parafacial area yellowish brown; wing mostly hyaline, infuscate spots only over crossveins, lacking spurious veins; basal 1–4 tergites densely microtomentose, grayish brown, 5th tergite of male sparsely microtomentose to bare, subshiny to shiny.

Description.—Small shore flies, body length 1.30–1.86 mm; yellowish brown to brown with yellowish-silver and gray microtomentum.

Head: Frons ventrolateral triangle brown

with yellowish-silver microtomentum, anterior semicircle brown, laterally paler than ventrolateral triangles with yellowish-silver microtomentum, medially same color as ventrolateral triangles. Occiput dark brown with yellowish-silver microtomentum. Outer vertical seta $\frac{3}{4}$ length of inner vertical seta. Scape and pedicel brown; flagellomere 1 brown dorsally, yellowish brown ventrally; arista with minute branches. Facial background coloration yellowish brown to brown with yellowish-silver microtomentum; narrow band of yellowish-silver microtomentum along eye margin beginning at antenna, extended and gradually blended with yellowish-silver microtomentum on gena. A combination of bands extended ventrally from antennae: Laterally along parafacial suture a narrow yellowish brown band gradually darkening ventrally; medially along parafacial suture a narrow band of yellowish-silver microtomentum, and

medially along this band a yellowish brown band. Gena covered with dense, silvery-gray microtomentum; postgena covered with silvery gray microtomentum, less dense than on gena. Palpus yellowish brown; prementum yellowish brown.

Thorax: Scutal length 0.44–0.59 mm; scutellar length 0.17–0.24 mm. Mesonotum vittate, background brown; with brown stripe medially, along dorsocentral and intra-alar tracks, between brown stripes yellowish-silver microtomentum; scutellum medially brown with yellowish-silver microtomentum, laterally with silvery gray microtomentum, anteriorly sparse; anepisternum brown with yellowish-silver microtomentum; katepisternum brown with yellowish-silver microtomentum; subscutellum dark brown with sparse, yellowish-silver microtomentum; anatergite shiny dark brown with sparse, yellowish-silver microtomentum. Chaetotaxy: Presutural dorsocentral seta $\frac{2}{3}$ to $\frac{3}{4}$ length of anterior postsutural dorsocentral seta; anterior postsutural dorsocentral seta $\frac{2}{3}$ to $\frac{3}{4}$ length of posterior dorsocentral seta; lateral scutellar seta $\frac{1}{3}$ length of apical seta. Wing: Length 1.62–2.13 mm; width 0.66–0.92 mm; costal vein ratio 0.39–0.50; M vein ratio 0.30–0.52; background, veins and crossveins brown, posteriorly wing slightly darker; r-m crossvein dark brown dorsally, yellowish brown ventrally; dm-cu crossvein dark brown; wing cells anteriorly to r-m and posteriorly to dm-cu slightly lighter. Halter yellowish brown. Legs yellowish brown; femora yellowish brown; tibiae yellowish brown; tarsi yellowish brown with tarsomere 5 brown.

Abdomen: Brown; male tergites 1–4 brown with yellowish-silver microtomentum, tergite 5 shiny brown, tergite 5 medially $\frac{1}{2}$ length of tergite 4; female tergites 1–5 brown with yellowish-silver microtomentum, tergite 5 medially $\frac{1}{2}$ length of tergite 4. Male terminalia (Figs. 1–3): epandrium-cerci-surstyli fused; epandrium a broad, U-shaped band with small rounded anteroventral projections; cercus completely fused laterally with epandrium with small v-

shaped space dorsally separating cercus from epandrium, and bearing many long setulae; surstyli fused dorsally with epandrium, rounded ventrally with field of a few long setae and many smaller setulae; phallopodeme triangular in lateral view, posteroventral projection spatulate, anteroventral projection narrow and rounded; aedeagus elongate triangular in lateral view; subepandrial plate-gonite-hypandrium fused; subepandrial plate reduced to region between gonite and hypandrium, with small rounded dorsal projection; gonite with broad base, rounded posterior projection with pointed bifurcate apical projections, prominent ventromedial setulae; hypandrium broadly fused with subepandrial plate, narrow anteromedially with pointed anterolateral projections and rounded ventral projections.

Type material.—The lectotype male of *Philygria debilis* Loew, here designated to preserve stability and make more universal the use of this name, is labeled “[United States.] Penns[ylvania; green; handwritten]/Loew Coll./Debilis m [handwritten]/Type 11160 [red; number handwritten]/*Philygria debilis* Lw. det WWirth '61 [all except “det WWirth” handwritten]/LECTOTYPE *Philygria debilis* Loew ♂ By Mathis/Edmiston [black border; all except “LECTOTYPE” and “By” handwritten].” The lectotype is double mounted (short pin in a rectangular block of cork), is in good condition (pin obscures much of mesonotum), and is deposited in the MCZ (11160). There are no paralectotypes.

The lectotype female of *Philygria fuscicornis* Loew, here designated to preserve stability and make more universal the use of this name, is labeled “[United States.] mittel st [Middle States; green; handwritten]/Loew Coll./fuscicornis [handwritten]/Type 11159 [red; number handwritten] /LECTOTYPE *Philygria fuscicornis* Loew ♀ By Mathis/Edmiston [black border; all except “LECTOTYPE” and “By” handwritten].” The lectotype is double mounted (short pin in a long and narrow rectangular block of cork), is in good condition (pin

obscures some of mesonotum), and is deposited in the MCZ (11159). There are no paralectotypes.

The syntypes of *Cressoniella montana* Saether were collected in Colorado. Boulder: North Boulder Creek (northern branch) and were deposited in the Zoological Museum at the University of Oslo (ZMO). In an attempt to examine these syntypes, we wrote to the author, Ole A. Saether (University of Bergen, Norway), who in turn corresponded with the staff from the Zoological Museum in Oslo (ZMO). Based on feedback from ZMO, Dr. Saether wrote to us that the syntypes of *C. montana* could not be located despite a diligent search and that they are apparently lost. Thus, we suggest continued recognition of the synonymy that Mathis and Wirth (1977) published and as indicated in the generic and this species' synonymy.

Other specimens examined.—Because specimens of *P. debilis* are abundant in collections and the species is widespread in the Nearctic Region we have not recorded specific locality data.

Distribution.—Nearctic: Canada (Alberta, British Columbia, Manitoba, Ontario, Quebec, Saskatchewan), Mexico (Baja California), United States (Alabama, Arizona, Arkansas, California, Connecticut, Colorado, Delaware, District of Columbia, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming).

The distribution locales are so numerous that a map with discrete points would be redundant. Locales from preserved specimens include all the contiguous states except Florida, Georgia, Kentucky, and Louisiana. The northernmost distribution seems to be near 50°N with one specimen collect-

ed from Churchill, Manitoba (58°N). The locale for the southernmost specimen observed was from northern Baja California Norte, Mexico.

Remarks.—*Philygria debilis* is one of the most common and widespread Nearctic species, probably because of its occurrence on lawns associated with human habitations and recreation, such as golf courses (Cresson 1944, Zack 1998). Also, the overall body and wing length often exceeds 2 mm, allowing this species to be easily collected with larger mesh nets.

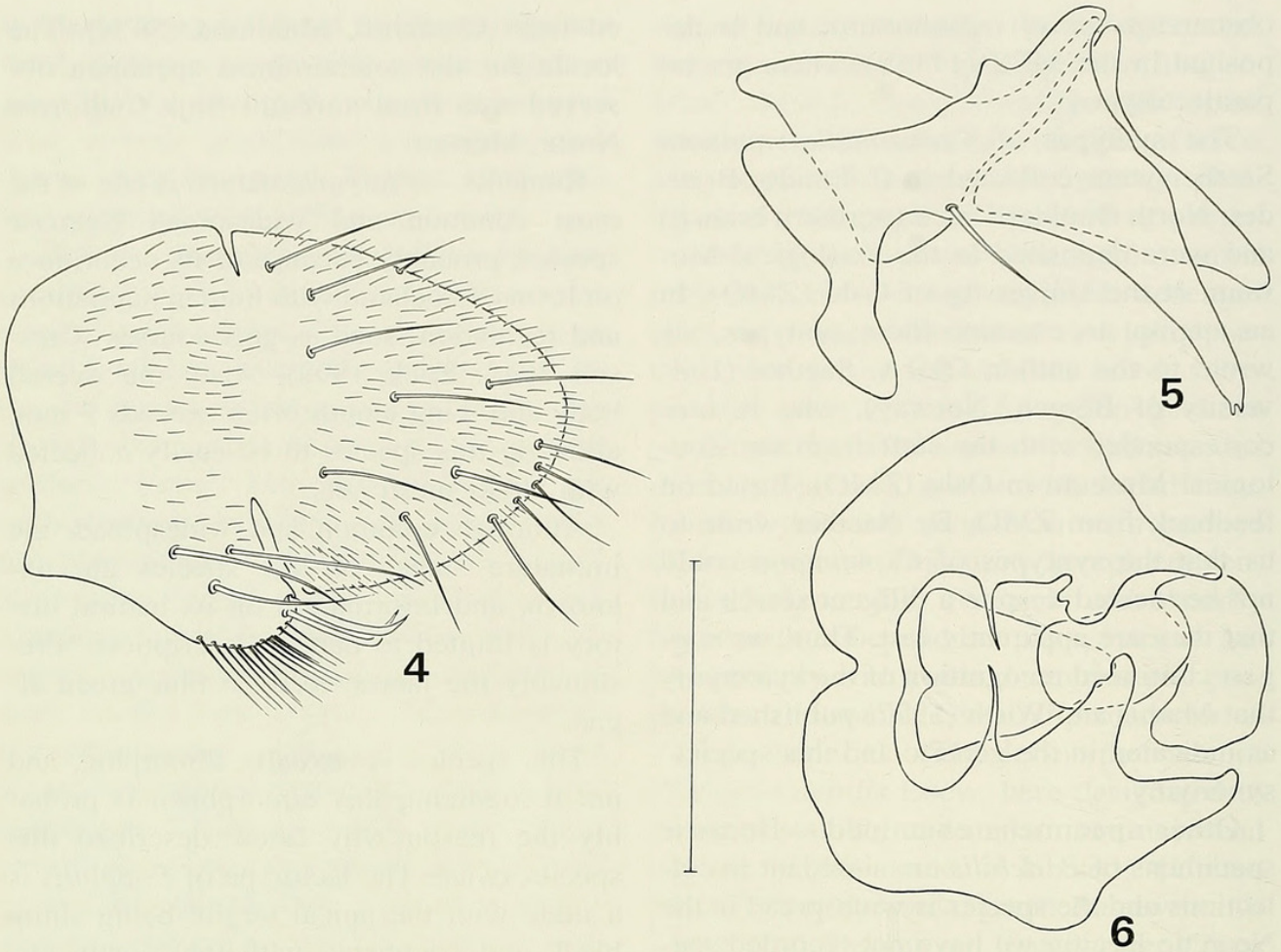
Although common and widespread, the immature stages of this species are unknown, and information on its natural history is limited to habitat descriptions. Presumably the larvae feed on blue-green algae.

This species is sexually dimorphic, and not recognizing this dimorphism is probably the reason why Loew described this species twice. The lectotype of *P. debilis* is a male with the apical tergite being shiny black and contrasted with the mostly microtomentose anterior tergites. The lectotype of *P. fuscicornis* is a female of the same species, and all tergites, including the apical one, are more or less uniformly microtomentose and appear dull.

Philygria nigrescens (Cresson),
revised status
(Figs. 4–7)

Hydrina nigrescens Cresson 1930b: 80; 1944: 177 [review, list, Idaho, Utah].—Sturtevant and Wheeler 1954: 239 [review].—Hollmann-Schirrmacher 1998: 66 [synonymy with *P. debilis*].

Philygria nigrescens: Wirth and Stone 1956: 469 [generic combination, California].—Wirth 1965: 745 [Nearctic catalog].—Cole 1969: 400 [western United States].—Mathis and Zatwarnicki 1995: 197–198 [world catalog].—Zack 1998: 93 [list, Washington, natural history]; 1983: 216 [list, Washington]; 1998: 136 [list, Washington, natural history].



Figs. 4–6. Structures of the male terminalia of *Philygria nigrescens* (Alaska. Matanuska-Susitna: Talkeetna (62°18.9'N, 150°6.3'W)). 4, Epandrium, cerci, and surstylus, lateral view. 5, Phallapodeme, aedeagus, and gonites, lateral view. 6, Same, ventral view. Scale bar = 0.1 mm.

Diagnosis.—This species is distinguished from Nearctic congeners by the following combination of external characters: Parafacial dark brown; wing mostly hyaline, infuscate spots only over crossveins, lacking spurious veins; tergites brownish black to black, basal 3 sparsely microtomentose, subshiny, apical 2–3 mostly bare, shiny.

Description.—Small shore flies, body length 1.52–1.80 mm; generally gray to tan, abdomen black, subshiny to shiny.

Head: Frons ventrolateral triangles dark brown with yellowish-silver microtomentum, anterior semicircle brown, laterally paler than ventrolateral triangles with yellowish-silver microtomentum, medially darker circle. Occiput dark brown with yellowish-silver microtomentum. Outer vertical seta $\frac{3}{4}$ length of inner vertical seta. Scape and pedicel brown; flagellomere 1

brown dorsally, yellowish brown ventrally; arista with minute branches. Facial background coloration brown with yellowish-silver microtomentum; narrow band of silver microtomentum along eye margin beginning at antenna, extended and gradually blended with silver microtomentum on gena. Laterally along parafacial suture a narrow brown band. Gena covered with dense, silvery gray microtomentum; post-gena covered with silvery gray microtomentum, less dense than on gena. Palpus yellowish brown; prementum brown.

Thorax: Scutal length 0.59 to 0.62 mm; scutellar length 0.26 mm. Mesonotum vitate anteriorly and mostly unicolorous posteriorly; background coloration brown, medially brown, lateral from medial line yellowish-silver microtomentum, dorsocentral line slightly darker, laterally along dorso-

central line yellowish-silver microtomentum, intra-alar line slightly darker, laterally along intra-alar line yellowish-silver microtomentum; scutellum medially and laterally brown with yellowish-silver microtomentum; anepisternum dark brown with yellowish-microtomentum, darker ventrally; katepisternum dark brown with silver microtomentum, less dense ventrally; subscutellum dark brown with sparse, yellowish-silver microtomentum; anatergite shiny dark brown with sparse, yellowish-silver microtomentum. Chaetotaxy: presutural dorsocentral seta $\frac{2}{3}$ – $\frac{3}{4}$ length of anterior postsutural dorsocentral seta; anterior postsutural dorsocentral seta $\frac{2}{3}$ – $\frac{3}{4}$ length of posterior dorsocentral seta; lateral scutellar seta $\frac{1}{3}$ length of apical seta. Wing: Length 2.11–2.24 mm; width 0.95–0.98 mm; costal vein ratio 0.37–0.43; M vein ratio 0.27–0.38; veins and crossveins brown; r-m crossvein dark brown dorsally, brown ventrally; dm-cu crossvein dark brown. Halter yellowish brown. Legs brown; femora brown; tibia brown, yellowish brown near tibio-femoral joint; tarsi yellowish brown with tarsomere 5 brown.

Abdomen: Dark brown; male tergites 1–3 dark brown with sparse yellowish-silver microtomentum, tergites 4–5 shiny, dark brown; tergite 5 medially $\frac{1}{2}$ length of tergite 4; female tergites 1–3 brown with yellowish-silver microtomentum, tergites 4–5 shiny dark brown and dorsomedially $\frac{2}{3}$ length of tergite 4. Male terminalia (Figs. 4–6): Epandrium-cerci-surstyli fused; epandrium broad U-shaped band with small rounded anteroventral projections; cerci completely fused laterally with epandrium, with small v-shaped spaces dorsally and ventrally separating cerci from epandrium, with a few setae and many setulae; surstyli dorsally fused with epandrium, rounded ventrally with field of a many long setae and many smaller setulae; phallapodeme triangular in lateral view, posteroventral projection spatulate, ventrally with broad v-shaped flange, and broad rounded anteroventral projections; aedeagus elongate trian-

gular in lateral view; 10th sternite dorsad of aedeagus, rectangular in ventral view; subepandrial plate-gonite-hypandrium fused; subepandrial plate reduced to region between gonite and hypandrium with small rounded dorsal projection; gonite with broad base, rounded posterior projection with pointed bifurcate apical projections, prominent ventromedial setula; hypandrium broadly fused with subepandrial plate, narrow anteromedially with rounded anterolateral projections and large rounded ventral projections.

Type material.—The holotype male of *Nostima nigrescens* Cresson is labeled “London Hill Mine/Bear Lake 21.7.03 [21 Jul 1903; date handwritten] B[ritish]C[Columbia]/altitude 7,000 ft [numeral 7 handwritten]/R P Currie Collector/Type No. 21849 U.S.N.M. [numeral handwritten] [red]/TYPE No. Hydrina nigrescens [name handwritten] E.T. Cresson, Jr [red].” The holotype is glued by the right thorax to a paper point, is in good condition (left tarsus missing and left wing broken but attached to body), and is deposited in the USNM (21849).

Other specimens examined.—(7 ♂, 19 ♀) CANADA. ALBERTA. Laggan (Lake Louise), 26 Jul 1928, O. Bryant (1 ♀; USNM).

NORTHWEST TERRITORIES. Akla-vik, 2–22 Jun 1931, O. Bryant (1 ♂, 1 ♀; USNM).

UNITED STATES. ALASKA. Matanuska-Susitna: Matanuska (rotary trap), 17 May–10 Jun 1944, J. C. Chamberlin (2 ♂, 7 ♀; USNM); Matanuska Valley, 16 Jun 1945, J. C. Chamberlin (2 ♂; USNM); Talkeetna (62°18.9'N, 150°6.3'W) 7 Aug 2002, D. and W. N. Mathis (2 ♂; USNM), 4 Aug 2003, D. and W. N. Mathis (1 ♂, 6 ♀; USNM).

ARIZONA. Coconino: Long Valley (34°31.3'N, 111°19.7'W) 16 Aug 1951 (1 ♀; USNM).

CALIFORNIA. San Bernardino: Mountain Home, 12 Sep 1953, E. Schlinger (1 ♀; USNM).

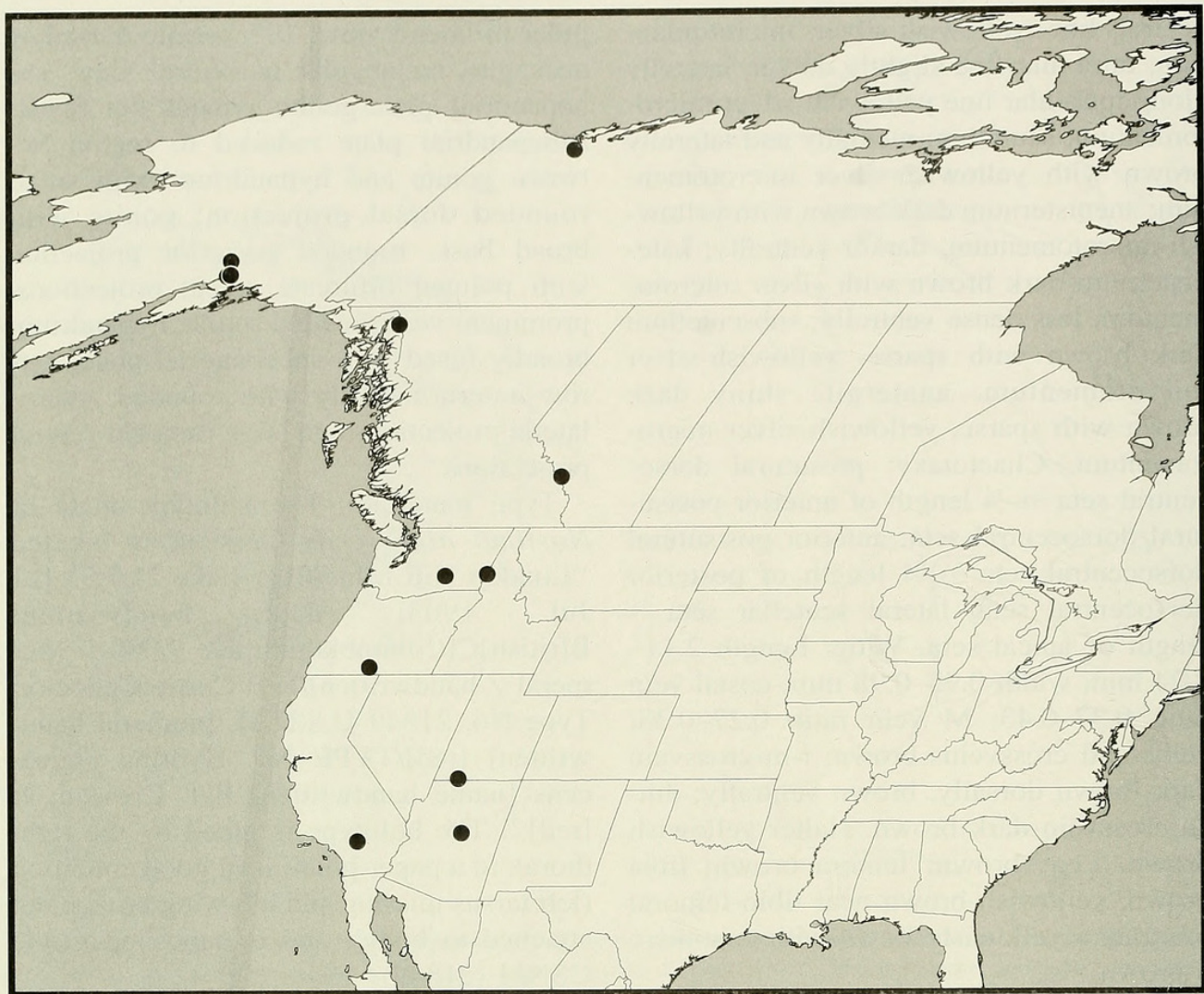


Fig. 7. Distribution map for *Philygria nigrescens*.

OREGON. Lake: Quartz Mountain ($42^{\circ}19.3'N$, $120^{\circ}48.9'W$; 1,600 m), 14 Jun 1984, R. Danielsson (1 ♀; ZIL).

UTAH. Kane: Coral Pink Sand Dunes ($37^{\circ}2.8'N$, $112^{\circ}40.7'W$), 16 May 2001, D. and W. N. Mathis (1 ♀; USNM).

Distribution (Fig. 7).—Nearctic: Canada (Alberta, British Columbia, Northwest Territories), United States (Alaska, Arizona, California, Idaho (literature record), Oregon, Utah, Washington (literature record)).

Remarks.—This species is rarely collected, probably because we have not discovered the requirements of its microhabitat. The few specimens available were usually collected along with much greater numbers of *P. debilis*, although at northern latitudes, such as sites in Alaska and the Northwest

Territories, we only collected specimens of this species.

The most reliable character for distinguishing this species is the brownish black to black abdominal tergites with the last two tergites being shiny, almost completely devoid of microtomentum.

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