

**ETHIROMYIA, A NEW GENUS OF HOLARCTIC DOLICHOPODINAE
(DIPTERA: DOLICHOPODIDAE)**

SCOTT E. BROOKS AND TERRY A. WHEELER

(SEB) Diptera Unit, Invertebrate Biodiversity, Agriculture and Agri-Food Canada, K.W. Neatby Building, 960 Carling Ave., Ottawa, Ontario, K1A 0C6, Canada (email: brookss@agr.gc.ca); (TAW) Department of Natural Resource Sciences, McGill University (Macdonald Campus), Ste-Anne-de-Bellevue, Quebec, H9X 3V9, Canada (email: wheeler@nrs.mcgill.ca)

Abstract.—*Ethiomyia* Brooks, new genus, is described, and distinguished from other Dolichopodinae by the following features: wing vein M straight and subparallel to R_{4+5} ; notum of thorax metallic greenish black or bluish black, with violet reflections; thoracic pleuron with a cluster of fine hairs in front of the posterior spiracle; foretibia of males with an elongate apicoventral seta; cercus of males whitish with black border, large, rounded, with long, fine marginal setae; dorsal surstylus with preapical dorsal notch and keel-like projection; female terminalia with inner medial pair of spines on tergite 10. The genus comprises three species: *Ethiomyia purpurata* (Van Duzee), **new combination** (eastern Nearctic); *Ethiomyia violacea* (Van Duzee), **new combination** (eastern Nearctic); and *Ethiomyia chalybea* (Wiedemann), **new combination** (Europe). All species are redescribed and a key is provided.

Key Words: Dolichopodidae, Dolichopodinae, *Ethiomyia*, new genus, Holarctic

Gymnopternus Loew is a diverse (more than 100 species) and widespread genus of dolichopodine flies found in the Nearctic, Palearctic, and Oriental regions. Dolichopodid workers in the Old and New World have differed in their views of the taxonomic rank of *Gymnopternus*. Although Loew (1857) originally assigned *Gymnopternus* generic rank, subsequent Old World workers treated it as a synonym (Becker 1917–1918, Negrobov 1991) or subgenus (Pollet 1990, Wei 1997, Chandler 1998, Yang and Grootaert 1999, Yang and Saigusa 1999) of *Hercostomus* Loew. Pollet (2004) recently restored *Gymnopternus* to generic rank and transferred the Palearctic species from the subgenus *Hercostomus* (*Gymnopternus*) to *Gymnopternus*. In the Nearctic, *Gymnopternus* has long been recognized as a genus

(e.g., Curran 1933, 1934; Robinson 1964; Foote et al. 1965; Robinson and Vockeroth 1981; Pollet et al. 2004) and that classification was supported by a phylogenetic analysis (Brooks 2005) that placed *Gymnopternus* not with *Hercostomus*, but instead closely related to *Dolichopus* Latreille (including species formerly placed in *Lichtwardtia* Enderlein), based on the synapomorphic possession of a cluster of fine hairs on the thoracic pleura in front of the posterior spiracle.

Gymnopternus is a morphologically uniform genus, with the exception of an enigmatic species group that includes *Gymnopternus chalybeus* (Wiedemann), *Gymnopternus purpuratus* (Van Duzee), and *Gymnopternus violaceus* (Van Duzee) (herein referred to as the *chalybeus* group). In his

revision of the European species of the subgenus *Hercostomus* (*Gymnopternus*), Pollet (1990) noted several differences between *G. chalybeus* and its European congeners, but ultimately left that species in the subgenus *Hercostomus*. Recently, Pollet (2004) further noted a number of differences between the *chalybeus* group and *Gymnopternus*, based on a study of over thirty species from the Nearctic and Palaearctic Regions. In the same paper, he hypothesized a sister group relationship between the *chalybeus* group and the remaining *Gymnopternus* based on subparallel wing veins R_{4+5} and M. In contrast, Brooks (2005) considered that character state plesiomorphic, and found that the *chalybeus* group is the sister group to *Dolichopus* based on the possession of a distinctive, dorsally notched dorsal surstylar lobe of the male genitalia (Figs. 4, 5, 9, 10) and a pair of inner, medial spines on tergite 10 of the female terminalia (Figs. 7, 8). The monophyly of *Gymnopternus*, exclusive of the *chalybeus* group, is supported by the possession of elongate projections on the base of the ejaculatory apodeme and a broad, lobate postgonite (Brooks 2005).

Dolichopus is considered to be monophyletic based on the synapomorphic possession of one or more strong dorsal setae on the hind basitarsus, a distinctive S-shaped bend in wing vein M, and a T-shaped ejaculatory apodeme (Brooks 2005). The monophyly of the *chalybeus* group is supported by the possession of an elongate apicoventral seta on the male foretibia, and the distinctive male cercus, characterized by long, fine marginal setae (Pollet 2004, Brooks 2005). Despite the fact that both of these features are homoplasious within the Dolichopodinae and have arisen in some species of *Dolichopus* and *Hercostomus*, they are part of a suite of congruent nested synapomorphies that support the monophyly of the *chalybeus* group. In this paper the new genus *Ethiomyia* is established for the *chalybeus* group, and its three included species are redescribed.

MATERIALS AND METHODS

This study is based on material housed in the Canadian National Collection of Insects, Ottawa, Ontario, Canada (CNC), Lyman Entomological Museum, McGill University, Ste-Anne-de-Bellevue, Quebec, Canada (LEM), Museum für Naturkunde der Humboldt Universität zu Berlin, Berlin, Germany (ZMHB) and Naturhistorisches Museum Wien, Wien, Austria (NMW). Morphological terminology mainly follows McAlpine (1981); terms for male genitalia follow Cumming et al. (1995) and Sinclair (2000). Body length is measured from the base of the antenna to the tip of the abdomen. Wing length is measured from the humeral crossvein to the wing apex. Relative lengths of each tarsomere are representative ratios expressed using the following formula: $t_1/t_2/t_3/t_4/t_5$, where t_1 is the basitarsus.

Male and female terminalia were macerated in either 10% KOH, which was heated on a hot plate for about 10 minutes, or in 85% lactic acid, heated in a microwave oven. Each microwave heating interval comprised 30 seconds and was followed by a 1–2 minute cooling period during which macerated muscle tissue was removed with a fine probe.

Figures showing male genitalia in lateral view are oriented as they appear on the intact specimen (rotated 180° and lateroflexed to the right), with the morphologically ventral surface up, dorsal surface down, anterior end facing right and posterior end facing left. Figures showing the male genitalia in ventral view are correspondingly oriented with the anterior end facing right and posterior end facing left. The following abbreviations are used in the figures: apv lobe: apicoventral epandrial lobe; bv lobe: basiventral epandrial lobe; bv seta: basiventral epandrial seta; cerc: cercus; dsur: dorsal lobe of surstylus; ejap: ejaculatory apodeme; epand: epandrium; hy: hypandrium; hyap: hypandrial apodeme; pgon: postgonite; ph: phallus; S: sternite; T: tergite; vsur: ventral lobe of surstylus. Abbreviations

used in the text include T: abdominal tergite, and S: abdominal sternite.

Ethiomyia Brooks, new genus

Type species: *Hercostomus purpuratus* Van Duzee 1925: 185 [Nearctic], by present designation.

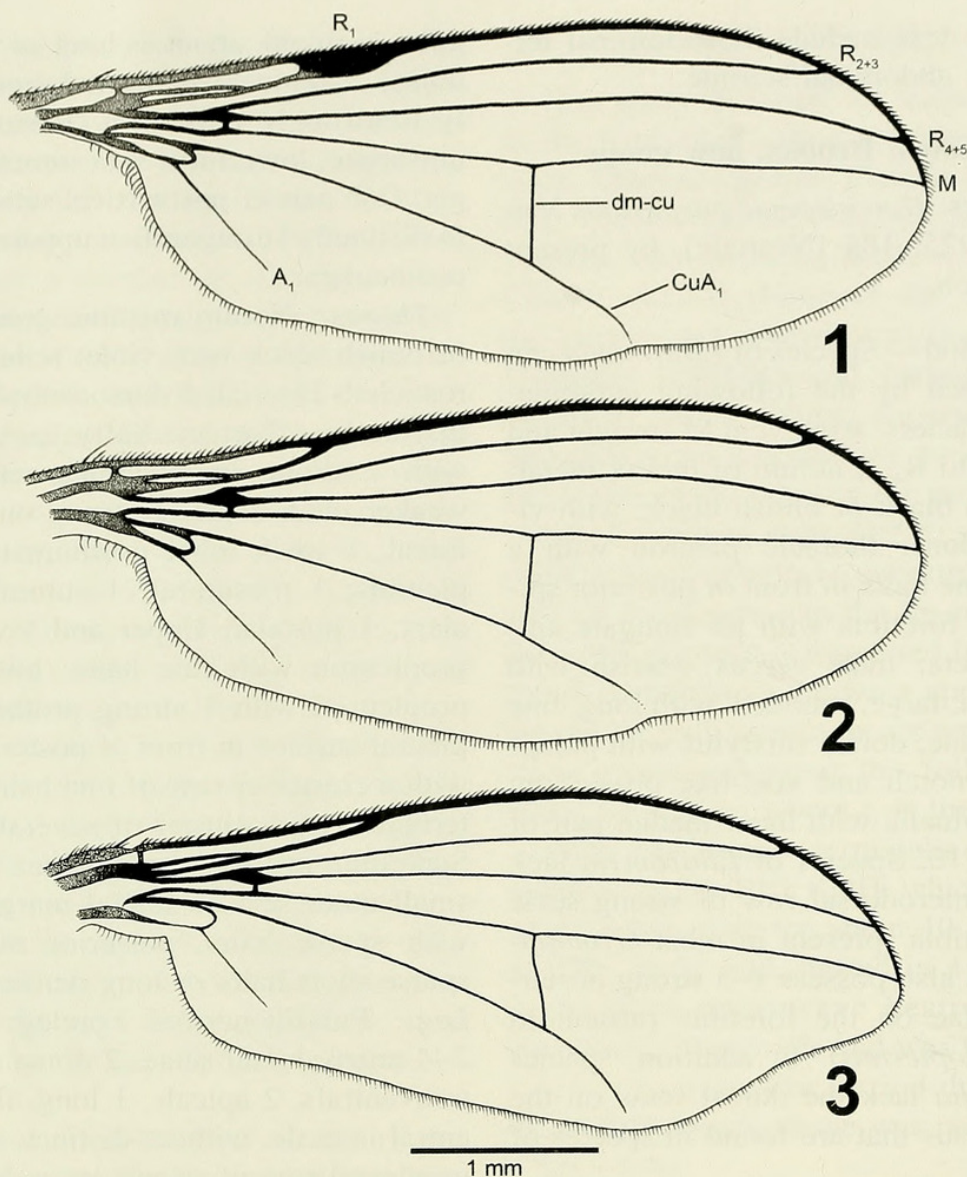
Recognition.—Species of *Ethiomyia* can be recognized by the following combination of characters: wing vein M straight and subparallel to R_{4+5} ; notum of thorax metallic greenish black or bluish black, with violet reflections; thoracic pleuron with a cluster of fine hairs in front of posterior spiracle; male foretibia with an elongate apicoventral seta; male cercus whitish with black border, large, rounded, with long, fine marginal setae; dorsal surstylus with preapical dorsal notch and keel-like projection; female terminalia with inner medial pair of spines on T10. Species of *Ethiomyia* lack a distinct anterodorsal row of strong setae on the foretibia (present in most *Gymnopternus*), and also possess 1–3 strong posteroventral setae on the foretibia (absent in most *Gymnopternus*). In addition, species of *Ethiomyia* lack the dorsal setae on the hind basitarsus that are found in species of *Dolichopus*.

Description.—*Head*: Vertex not excavated, 1 pair of strong divergent ocellar setae, 1 pair of strong vertical setae, stronger than postverticals. Frons about 2–2.8× wider than high, sides weakly convergent anteriorly. Face broad in male, sides slightly convergent below or subparallel, broader in female with sides subparallel. Clypeus slightly produced to strongly bulging, especially in female, lower margin straight or slightly emarginate, ending well above lower eye margin. Palp ovoid, with weak setae on distal half of outer surface and a distinct apical seta. Proboscis large and projecting or moderate in size. Antenna inserted above middle of head; scape subconical, dorsally setose, with well-developed acute medioventral process; pedicel short, with nipplelike medial condyle; first flagellomere subtriangular to ovoid, about as long as wide; arista dorsal, 2-segmented, second segment weakly to strongly pubescent. Postocular setae uniseriate, lowermost seta sometimes stronger. One pair of postvertical setae, subequal to distinctly stronger than uppermost pair of postoculars.

Thorax: Notum metallic greenish black or bluish black with violet reflections. Acrostichals biserial; 6 dorsocentrals, fifth pair distinctly offset medially; postpronotum with 1 strong medioclinate seta and 2–3 weaker outer setae; 1 strong outer posthumeral, 1 weak inner posthumeral; 2 notopleurals; 1 presutural; 1 sutural; 2 supralars; 1 postalar. Upper and lower part of propleuron with fine hairs; lower part of propleuron with 1 strong prothoracic seta; pleural surface in front of posterior spiracle with a cluster or row of fine hairs; metepisternum with a cluster of several fine hairs. Scutellum with 1 strong inner seta and 1 small outer seta on lateral margin, dorsum with sparse hairs, posterior margin with sparse short hairs or long dense hairs.

Legs: Pulvilli normal. Foreleg: Tibia with 2–4 anterodorsal setae, 2 dorsals, 1–3 posteroventrals, 2 apicals, 1 long, fine apicoventral in male, without distinct, regular, anterodorsal row of strong setae. Midleg: Femur with 1 anterior preapical seta; tibia with 3–5 anterodorsals, 2 dorsals, 1–3 anteroventrals, 5 apicals. Hind leg: Coxa with strong lateral seta near or slightly below middle; femur with 1 anterodorsal preapical seta; tibia with 3–6 anterodorsals, 1 preapical dorsal, 3–6 posterodorsals, 3–6 ventrals, 2 apicals, apex with weak to indistinct ridgelike process posterodorsally in male; basitarsus subequal to or slightly shorter than second tarsomere, without dorsal setae, with distinct basiventral seta, male with hooklike process posterobasally.

Wing (Figs. 1–3): Brownish to grey. Male costa with or without pterostigma near insertion of R_1 ; R_{2+3} relatively straight to weakly convex; R_{4+5} straight with posterior curve in distal section; distal section of M beyond crossvein dm-cu with barely



Figs. 1-3. Wings. 1, *Ethiromyia purpurata*, male. 2, *E. purpurata*, female. 3, *E. violacea*, male.

discernable sinuous bend before middle, straight, or with slight convex curve in distal section similar to that of R_{4+5} , ending near wing apex; R_{4+5} and M subparallel; crossvein dm-cu subequal to or shorter than distal section of CuA_1 .

Abdomen: Subconical. T1-5 setose. Male: T6 bare; S2 unmodified; S3 unmodified or emarginate and mainly membranous posteromedially; S4 strongly emarginate or divided, membranous medially; S5 mainly to entirely membranous; S6 mainly membranous, sclerotized along anterior margin; segment 7 bare, forming well-developed peduncle; S8 subquadrate to subtriangular, setose. Hypopygium (Figs. 4-6, 9-10)

large. Epandrium subtriangular in lateral view, about $1.5-2\times$ longer than high, foramen lateral, well-separated from base of cerci; basiventral epandrial lobe weakly developed, basiventral epandrial seta present; apicoventral epandrial lobe well-developed, subquadrate, rounded or flared apically, with 1 lateral and 2 apical setae. Surstylus 2-lobed. Ventral lobe more or less digitiform, with or without dorsal hump, with weak dorsal to dorsomedial preapical projection, apex with short, stout seta. Dorsal lobe larger than ventral lobe, with 1-2 strong dorsomedial setae and 1 preapical lateral seta, dorsal surface notched preapically with distinct to weakly developed

keellike projection across notch bearing a short seta (Fig. 5). Postgonite with anteroventral portion weakly sclerotized, nearly membranous and bifurcate anteriorly; posterodorsal portion vestigial (Figs. 9–10), or well-developed and digitiform (Fig. 5). Proctiger brushes absent. Cercus (Figs. 4, 9–10) large, round to ovoid, pale with dark margin; apical and lateral margin jagged, sometimes with well-developed digitiform projections (Figs. 4, 9); lateral and/or apical margin with very long, fine setae. Hypandrium elongate and slender, troughlike, free laterally with membranous connection to epandrium basally; hypandrial arms connected to hypandrium; hypandrial apodeme well-developed, with knob-like apex. Sperm pump cylindrical; ejaculatory apodeme rodlike; basal sclerite of sperm pump well-developed, thick and heavily sclerotized, broadly V-shaped in dorsal view. Phallus elongate and slender, apical portion with weak rounded projection (Figs. 5, 10), or finely serrate (Fig. 9). Female (Figs. 7–8): T6, T7, S6 and S7 undivided; T8 and S8 divided medially, tergite and sternite fused anterolaterally. Furca narrow and weakly sclerotized or absent. T10 divided medially into hemitergites each bearing 4–5 spines along outer margin and a single inner medial spine (Fig. 7), spines pointed to blunt apically. Upper lobe of cercus with short apical seta.

Etymology.—The generic name is derived from the Greek *etheria* (hair) in reference to the long hairs on the male cercus, and the Greek *myia* (fly). The gender is feminine.

Remarks.—*Ethiomyia* was referred to as “New Genus A” in Brooks (2005).

KEY TO SPECIES OF *ETHIOMYIA*

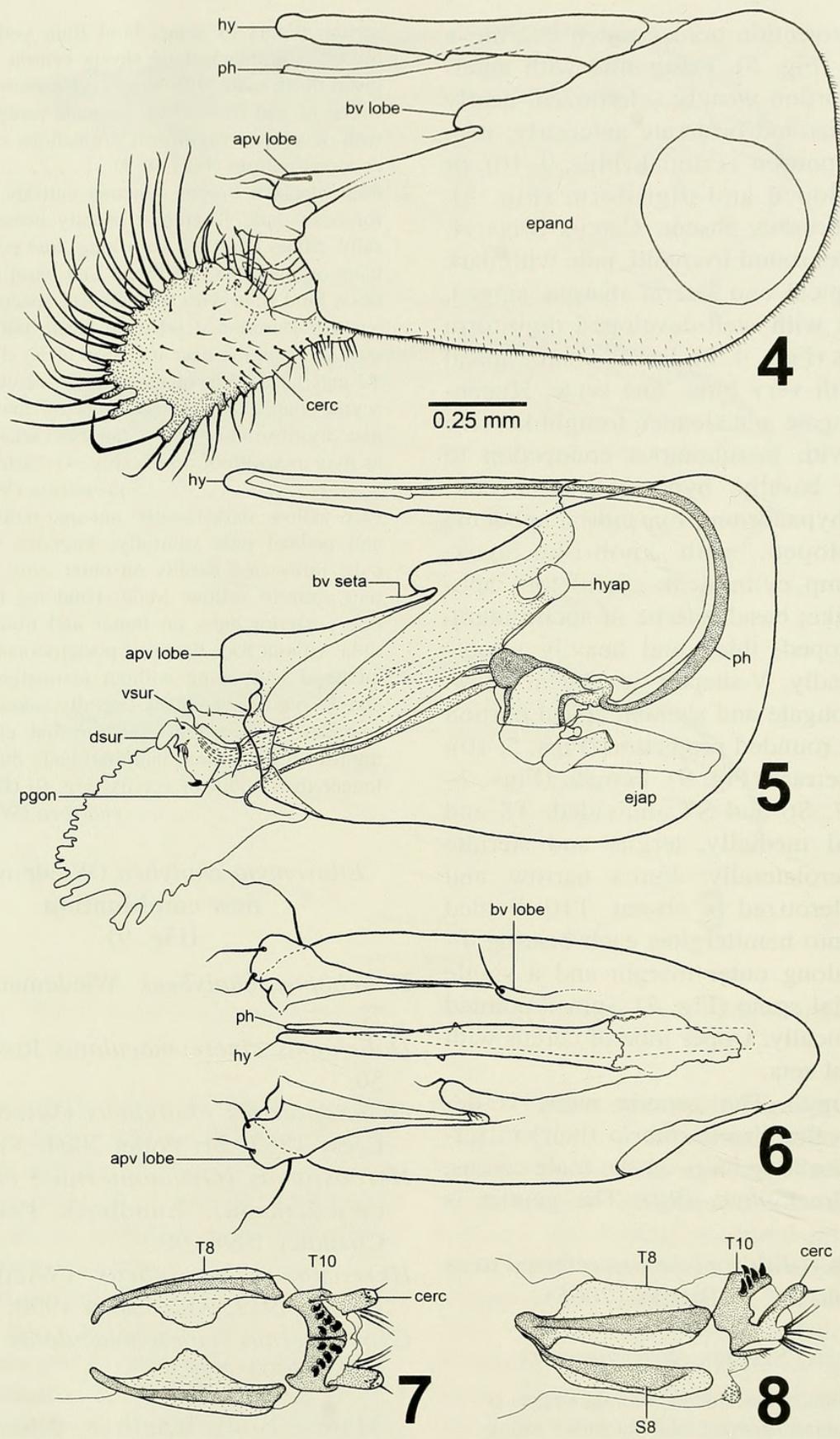
- 1. Mid- and hind tibiae yellow with dark spots at insertion points of setae; midtibia with 1 strong ventral seta at distal third; male with wing margin incised between veins M and CuA₁ (Fig. 3); male cercus with weakly developed digitiform projections on apicodorsal margin (Fig. 10) (eastern Nearctic) . . . *violacea* (Van Duzee)
- Mid- and hind tibiae without dark spots at in-

- sertion points of setae, hind tibia yellow or brown; midtibia lacking strong ventral seta at distal third; male with wing evenly convex between M and CuA₁ (Fig. 1); male cercus with well-developed digitiform projections on apicodorsal margin (Figs. 4, 9) 2
- 2. Palp blackish brown; antenna entirely black; forecoxa dark, forefemur usually brown dorsally. Male: Hind leg with long, fine posterior hairs on distal half of femur and basal part of tibia; hind tibia with four closely spaced, flattened posterodorsal setae on basal half; wing with pterostigma near insertion of R₁ (Fig. 1); T2 and T3 velvety black laterally; cercus with scythe-shaped apicoventral seta on first elongate digitiform projection, marginal setae about as long as width of cercus (Fig. 4) (eastern Nearctic) *purpurata* (Van Duzee)
- Palp yellow, dark basally; antenna with scape and pedicel pale ventrally; forecoxa mainly pale, infuscated basally on outer side, forefemur entirely yellow. Male: Hind leg lacking fine posterior hairs on femur and tibia; hind tibia without four flattened posterodorsal setae on basal half; wing without pterostigma; T2 and T3 not velvety black laterally; cercus with spatulate apicoventral seta on first elongate digitiform projection, marginal hairs distinctly longer than width of cercus (Fig. 9) (Europe) *chalybea* (Wiedemann)

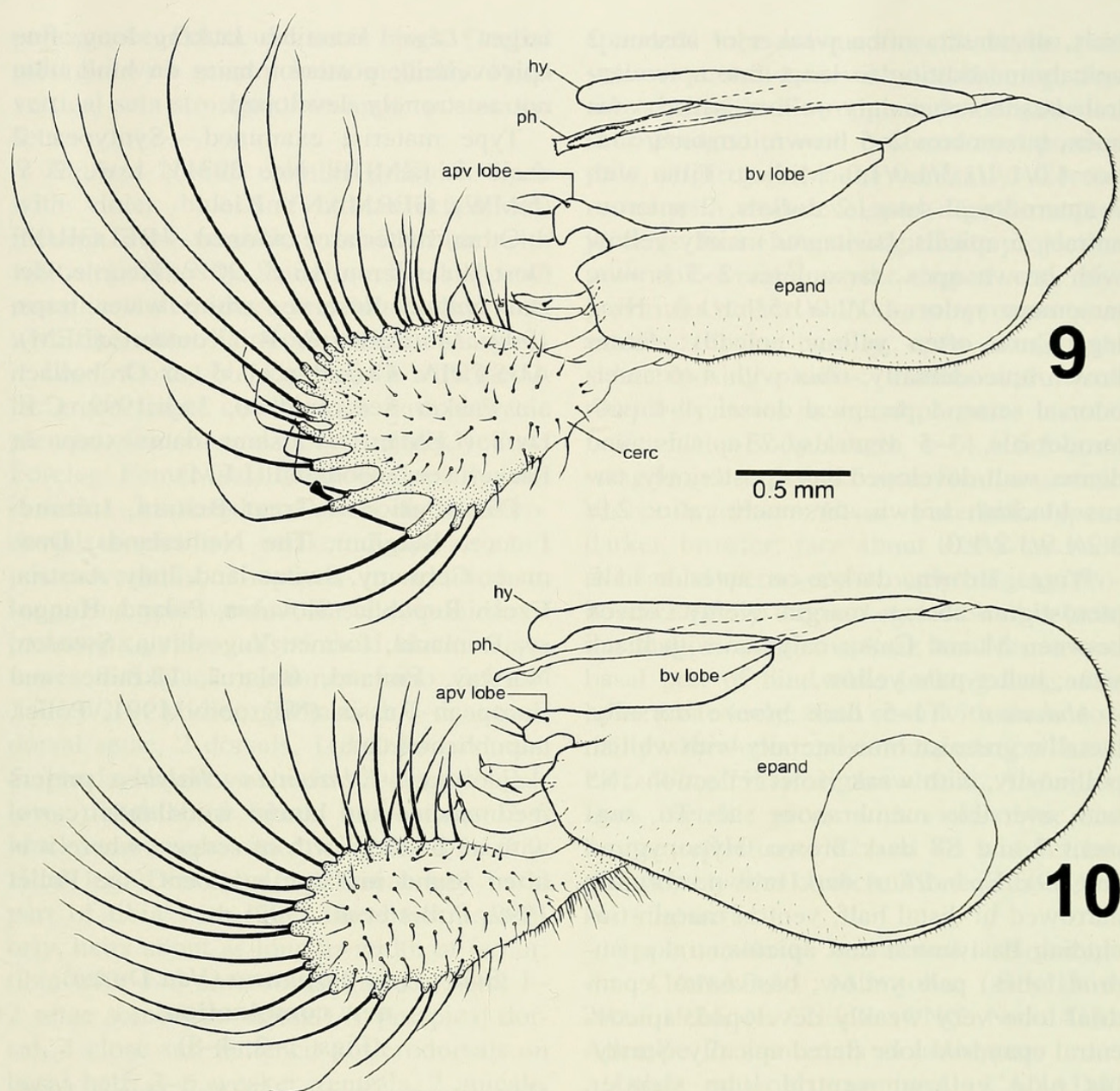
Ethiomyia chalybea (Wiedemann),
new combination
(Fig. 9)

- Dolichopus chalybeus* Wiedemann 1817: 72.
- Dolichopus cinereomaculatus* Roser 1840: 56.
- Gymnopternus chalybeus* (Wiedemann): Loew 1857: 21; Pollet 2004: 546.
- Hercostomus* (*Gymnopternus*) *chalybeus* (Wiedemann): Lundbeck 1912: 189; Chandler 1998: 90.
- Hercostomus chalybeus* (Wiedemann): Becker 1917: 212; Pollet 1990: 361.
- Gymnopternus cinereomaculatus* (Roser): Pollet 2004: 546.

Male.—Body length = 3.6–4.4 mm, wing length = 3.8–4.6 mm. *Head:* Frons metallic violet bronze or violet blackish, lower and lateral margins often metallic bluish green. Face and clypeus silvery-grey pollinose; face about 0.2× as wide as head;



Figs. 4–8. *Ethiomyia purpurata*. 4, Male genitalia, left lateral view (external). 5, Male genitalia, left lateral view (internal). 6, Male genitalia, ventral view (postgonite, surstylus and cercus not shown). 7, Female genitalia, dorsal view. 8, Female genitalia, left lateral view.



Figs. 9–10. *Ethiomyia chalybea* and *E. violacea*. 9, *E. chalybea*, male genitalia, left lateral view. 10, *E. violacea*, male genitalia, left lateral view.

clypeus strongly bulging. Palp mainly yellow, brownish black near base, with black hair. Proboscis large and usually projecting. Scape and pedicel yellow ventrally, dark brown dorsally; first flagellomere blackish brown, apex weakly pointed or rounded; arista dark brown, strongly pubescent. Post-ocular setae black. Ocellar tubercle with several hairs medially. Postvertical seta slightly stronger than upper postocular seta.

Thorax: Notum metallic greenish black or bluish black, with violet reflections. Pleuron dark metallic greenish blue and

bronze with whitish pollinosity. Scutellum black with metallic violet, green and blue reflections, with long, dense hairs on posterior margin. Notum and scutellum paler black bronze in older specimens.

Legs: Forecoxa, femora, fore- and mid-tibiae mainly yellow, mid- and hind coxae concolorous with thoracic pleuron, hind tibia more or less brownish, darker towards apex. Foreleg: Coxa darkened basally on outer side; tibia with 1–2 strong anterodorsal setae in basal part, 1–2 weaker distal anterodorsals, 2 dorsals, 1–2 posterovent-

trals, distal seta often weaker or absent, 2 apicals in addition to long, fine apicoventral; basitarsus mainly yellow with brown apex, tarsomeres 2–5 brown, tarsomere ratio: 4.0/1.7/1.3/1.0/1.0. Midleg: Tibia with 3 anterodorsal setae, 2 dorsals, 2 anteroventrals, 5 apicals; basitarsus mainly yellow with brown apex, tarsomeres 2–5 brown, tarsomere ratio: 4.0/2.0/1.5/1.1/1.0. Hind leg: Coxa often yellow apically; femur brown apicodorsally; tibia with 4–6 anterodorsal setae, 1 preapical dorsal, 4–6 posterodorsals, 3–5 ventrals, 2 apicals, and dense, well-developed hairs posteriorly; tarsus blackish brown, tarsomere ratio: 2.9/3.2/1.9/1.2/1.0.

Wing: Brown, darker on anterior half; pterostigma absent; margin evenly convex between M and CuA₁; calypter with black setae; halter pale yellow.

Abdomen: T1–5 dark bronze dorsally, metallic greenish blue laterally with whitish pollinosity, with weak violet reflections; S5 with eversible membranous sac; T6, segment 7 and S8 dark brown. Hypopygium (Fig. 9): Epandrium dark brown, abruptly narrowed in distal half, ventral margin (including basiventral and apicoventral epandrial lobes) pale yellow; basiventral epandrial lobe very weakly developed; apicoventral epandrial lobe flared apically. Surstylus pale yellow; ventral lobe slender, without dorsal hump; dorsal lobe with 2 strong, dark dorsomedial setae. Postgonite: posterodorsal portion vestigial. Cercus ovoid with well-developed digitiform projections, first elongate digitiform projection with apicoventral spatulate seta, marginal setae very long. Hypandrium amber, lacking dorsal process, tubular basally, open along right side exposing phallus. Phallus with a pair of serrate longitudinal bands apically.

Female.—Body length = 4.0–4.7 mm, wing length = 4.1–4.6 mm. Similar to male except as follows: *Head:* Face and clypeus broader; face about 0.3× as wide as head, slightly darker; clypeus weakly pollinose, bronze, especially on upper part; proboscis

larger. *Legs:* Foretibia lacking long, fine apicoventral; posterior hairs on hind tibia not as strongly developed.

Type material examined.—Syntypes: 2 ♂, 1 ♀ (ZMHB, No. 2931), 1 ♂, 2 ♀ (NMW), GERMANY: Kiel.

Other material examined.—BELGIUM: Oost-Vlaanderen: 16 ♂, 20 ♀, Heurne, Het Dal Nature Reserve, white water traps, 1997, M. Pollet & P. Grootaert (LEM); AUSTRIA: Carinthia: 1 ♂, nr Drobollach am Faaker See, reedbed, 3.vii.1992, C.E. Dyte (LEM); 1 ♀, same data except nr Faaker See, woodland (LEM).

Distribution.—Great Britain, Ireland, France, Belgium, The Netherlands, Denmark, Germany, Switzerland, Italy, Austria, Czech Republic, Slovakia, Poland, Hungary, Romania, former Yugoslavia, Sweden, Norway, Finland, Belarus, Ukraine, and European Russia (Negrobov 1991, Pollet, unpublished data).

Ecology.—*Ethiomyia chalybea* prefers reedmarshes and humid woodlands (carrs) with an undergrowth of sedges, where it is often found in large numbers (see Pollet 1992, Pollet et al. 1992).

Ethiomyia purpurata (Van Duzee),
new combination
(Figs. 1–2, 4–8)

Hercostomus purpuratus Van Duzee 1925: 185.

Gymnopternus purpuratus (Van Duzee): Foote et al. 1965: 499; Pollet et al. 2004: 41.

Male.—Body length = 4.2–5.0 mm, wing length = 3.7–4.3 mm. *Head:* Frons bronze to blackish bronze, with violet metallic reflections, lower and lateral margins usually metallic bluish green. Face and clypeus silvery-grey pollinose, sometimes with weak blue-green reflections; face about 0.3× as wide as head; clypeus strongly bulging. Palp blackish brown with black hairs. Proboscis large and projecting. Antenna black; first flagellomere rounded or weakly pointed apically; arista with short

pubescence. Postocular setae black. Ocellar tubercle with several hairs medially. Postvertical seta stronger than upper postocular seta.

Thorax: Notum metallic greenish black with violet, blue and bronze reflections. Pleuron dark metallic greenish blue with whitish pollinosity. Scutellum blackish with metallic violet, green and blue reflections; with fine, short hairs on posterior margin.

Legs: Coxae blackish brown with metallic green tinge, concolorous with thoracic pleuron; femora and tibiae mainly yellow. Foreleg: Femur usually brown dorsally; tibia with 1–3 anterodorsal setae, distal anterodorsals sometimes weaker, 2 dorsals, 1–3 posteroventrals, 2 apicals in addition to long, fine apicoventral; basal two-thirds of basitarsus yellow, distal third black, tarsomeres 2–5 black, tarsomere ratio: 3.5/1.6/1.2/1.0/1.0. Midleg: Tibia with 3–5 anterodorsal setae, 2 dorsals, 1–3 anteroventrals, 5 apicals; basal two-thirds of basitarsus yellow, distal third black, tarsomeres 2–5 black, tarsomere ratio: 4.3/2.2/1.5/1.1/1.0. Hind leg: Distal half of femur and basal part of tibia with long, fine hairs posteriorly, hairs about as long as width of femur; tibia with 4–5 anterodorsal setae (distal 1–2 setae sometimes dorsal), 1 preapical dorsal, 4 close set, flattened posterodorsals on basal half, 3–6 weaker ventrals, 2 apicals, apex of tibia brown posteriorly; tarsus blackish brown, tarsomere ratio: 2.8/3.1/2.0/1.2/1.0.

Wing (Fig. 1): Evenly dark brown; pterostigma present near insertion of R_1 ; wing margin evenly convex between M and CuA_1 ; calypter with black setae; halter pale yellow.

Abdomen: T1–5 dark metallic greenish, lateral part of T2 and T3 velvety black with fine hairs, T4 also with fine hairs laterally; T6, segment 7 and S8 dark brown. Hypopygium (Figs. 4, 5, 6): Epandrium mainly dark brown, ventral margin (including basiventral and apicoventral epandrial lobes) pale yellow, left basiventral epandrial lobe larger than right lobe (Fig. 6); apicoventral

epandrial lobe subquadrate. Surstylus pale yellow; ventral lobe with dorsal hump; dorsal lobe with 1 strong, dark dorsomedial seta. Postgonite with posterodorsal portion pale, digitiform, bent ventrally. Cercus round with well-developed digitiform projections, first elongate digitiform projection with apicoventral scythe-shaped seta. Hypandrium amber with dorsal process near middle, tubular basally, open along right side exposing phallus. Phallus with weak rounded process in apical portion.

Female.—Body length = 4.3–5.5 mm, wing length = 3.9–4.5 mm. Similar to male except as follows: **Head:** Face and clypeus darker, broader; face about $0.35\times$ as wide as head, clypeus very strongly bulging. Proboscis slightly larger. **Legs:** Foretibia lacking long, fine apicoventral; hind femur and basal part of hind tibia lacking long, fine hairs posteriorly; hind tibia with three normally developed posterodorsals on basal half. **Wing:** Pterostigma absent. **Abdomen:** Dark metallic green with violet, blue and bronze reflections, T2 and T3 without lateral velvety black patch, T2–4 without fine hairs laterally.

Type material examined.—Holotype ♂: CANADA: Manitoba: Stockton, 29.vii.1924, N. Criddle (CNC, No. 1413). Allotype ♀: same data as holotype.

Other material examined.—CANADA: Ontario: 1 ♂, Swastika, 7.vii.1987, J.R. Vockeroth (CNC); Quebec: 1 ♂, Beachgrove ($45^{\circ}37'N$, $76^{\circ}8'W$), 24.vi.1988, J.R. Vockeroth (CNC); Lac St-Francois Natural Wildlife Area: 18 ♂, 6 ♀, Marais Fraser, $45^{\circ}02.37'N$, $74^{\circ}27.73'W$, *Carex* meadow, pan trap, 03.vi–11.vi.1999, F. Beaulieu (LEM); 7 ♂, 3 ♀, same data except 26.v–03.vi.1999 (LEM); 1 ♀, same except sweep net, 28.v.1999 (LEM); 4 ♂, 3 ♀, same except sweep net, 05.vi.1999 (LEM); 8 ♂, 4 ♀, same except 11.vi.–19.vi.1999 (LEM); 3 ♂, 5 ♀, same except $45^{\circ}02.40'N$, $74^{\circ}28.03'W$ (LEM); 2 ♀, same except 26.v–03.vi.1999 (LEM); 3 ♂, 6 ♀, same except 11.vi–19.vi.1999 (LEM); 5 ♂, 12 ♀, NW of Aménagement Therrien, close to

ruisseau Therrien, 45°00.39'N, 74°30.99'W, *Carex* meadow, pan trap, 03.vi–11.vi.1999, F. Beaulieu (LEM); 2 ♂, 3 ♀, same except 11.vi.–19.vi.1999 (LEM); 1 ♂, same except 19.vi.–26.vi.1999 (LEM); 8 ♂, 3 ♀, same except sweep net, 05.vi.1999 (LEM); 1 ♂, same except 45°00.17'N, 74°30.63'W (LEM); 8 ♂, 1 ♀, same except pan trap, 03.vi–11.vi.1999 (LEM); 1 ♂, same except 11.vi.–19.vi.1999 (LEM); 2 ♂, 1 ♀, same except 19.vi.–26.vi.1999 (LEM).

Distribution.—Manitoba, Michigan, northern Ontario and southwestern Quebec.

Remarks.—Beaulieu and Wheeler (2001) collected large numbers of this species (as "*Gymnopternus* n. sp. 1") in lakeside sedge meadows in southwestern Quebec.

Ethiomyia violacea (Van Duzee),

new combination

(Figs. 3, 10)

Proarchus violaceus Van Duzee 1921: 123

Hercostomus (*Proarchus*) *violaceus* (Van Duzee): Leonard 1928: 782.

Hercostomus violaceus (Van Duzee): Steyskal 1959: 5.

Gymnopternus violaceus (Van Duzee): Robinson 1964: 158; Foote et al. 1965: 500; Pollet et al. 2004: 41.

Male.—Body length = 3.6–4.6 mm, wing length = 3.7–4.4 mm. *Head*: Frons bronze to blackish, with violet and bluish green metallic reflections. Face and clypeus silvery grey pollinose; face about 0.2× as wide as head; clypeus weakly or strongly bulging. Palp mainly yellow, brown basally, with black hairs. Proboscis medium sized. Scape and pedicel mainly yellow, brown dorsally; first flagellomere yellow basally, distal portion blackish-brown, apex rounded or weakly pointed; arista blackish brown, strongly pubescent. Postocular setae black. Ocellar tubercle with several hairs medially. Postvertical seta stronger than or subequal to upper postocular seta.

Thorax: Notum metallic greenish black to greenish bronze, with violet and bluish reflections. Pleuron dark metallic greenish

grey to greenish bronze, with whitish pollinosity. Scutellum dark bronze or blackish, with violet, green, and blue reflections; with fine, short hairs on posterior margin.

Legs: Fore- and hind coxae mainly yellow, brown at base on outer side, midcoxa more or less concolorous with thoracic pleuron; femora and tibiae yellow, mid- and hind tibiae with dark spots at insertion points of setae. Foreleg: Tibia with 2–4 anterodorsal setae, distal 2 anterodorsals usually weaker if developed, 2 dorsals, 1–3 posteroventrals, 2 apicals in addition to long, fine apicoventral; basitarsus mainly yellow with brown apex, tarsomeres 2–5 brown, tarsomere ratio: 4.1/1.7/1.3/1.0/1.0. Midleg: Femur with long, fine hairs basoventrally, hairs slightly shorter than width of femur; tibia with 3–4 anterodorsal setae, 2 dorsals, 2–3 anteroventrals, 1 ventral at distal third, 5 apicals; basitarsus mainly yellow with brown apex, tarsomeres 2–5 brown, tarsomere ratio: 4.0/2.0/1.5/1.1/1.0. Hind leg: Femur with well-developed setae dorsally; tibia with 3–4 anterodorsal setae, 3–4 posterodorsals, 3–4 ventrals, 1 preapical dorsal, 2 apicals; basitarsus mainly yellow with brown apex, tarsomeres 2–5 brown, tarsomere ratio: 2.6/3.2/2.0/1.3/1.0.

Wing (Fig. 3): Grey; pterostigma absent; wing margin incised between M and CuA₁; calypter with black setae; halter pale yellow.

Abdomen: T1–5 dark metallic green with greyish pollen laterally, T1–3 metallic black or bronze dorsomedially; T6, segment 7 dark brown; S8 brown or metallic greenish brown. Hypopygium (Fig. 10): Epandrium dark brown, sometimes dark metallic green basally, ventral margin (including basiventral and apicoventral epandrial lobes) pale yellow amber; basiventral epandrial lobe very weakly developed; apicoventral epandrial lobe rounded apically. Surstylus pale yellow; ventral lobe slender, without dorsal hump; dorsal lobe with 2 strong, dark dorsomedial setae. Postgonite: posterodorsal portion vestigial. Cercus ovoid with jagged margin, lacking well developed digitiform

projections, marginal setae very long. Hypandrium pale amber, apex enlarged. Phallus with weak rounded preapical projection.

Female.—Body length = 4.2 mm, wing length = 3.8–4.4 mm. Similar to male except as follows: *Head*: Face and clypeus broader; face about 0.3× as wide as head; clypeus strongly bulging. Proboscis slightly larger. *Legs*: Foretibia lacking long, fine apicoventral. *Wing*: Margin not distinctly incised between M and CuA₁.

Type material.—Holotype ♂: USA: New York: Erie County, Dayton, 5.vii.1920, M.C. Van Duzee (California Academy of Sciences, No. 3467) (not examined).

Material examined.—CANADA: Ontario: 1 ♂, Ottawa, 8.viii.1993, J.R. Vockeroth (CNC); Quebec: 2 ♂, Rigaud, Chemin de la Mairie, Parc Lévy Macdonald, 6.viii.2000, sweep net, S.E. Brooks (LEM); 1 ♀, Old Chelsea, 24.vi.1956, J.R. Vockeroth (CNC); USA: North Carolina: 1 ♂, Highlands, 3,800', 7.vi.1957, W.R.M. Mason (CNC); 1 ♂, same except 10.vi.1957, J.R. Vockeroth (CNC); 1 ♂, same except 16.vi.1957 (CNC); 1 ♀, same except 20.vi.1957 (CNC); Tennessee: 1 ♂, Knoxville, Univ. Farm, 20.v.1957, J.R. Vockeroth (CNC); 1 ♂, Knoxville Co., 26.v.1957 (CNC); 1 ♀, same except 30.v.1957 (CNC).

Distribution.—Ontario, Michigan, New York, Quebec to Massachusetts, south to Ohio, Virginia, Tennessee, North Carolina, and South Carolina (Pollet et al. 2004).

ACKNOWLEDGMENTS

Thanks to Frédéric Beaulieu whose fieldwork in Quebec sedge meadows provided many specimens of *E. purpurata* and to Marc Pollet who first recognized those specimens as *E. purpurata*. Thanks to Jeff Cumming (CNC), Joachim Ziegler (ZMHB), Peter Sehnal (NMW), Marc Pollet, and Peter Dyte for the loan of types and other specimens. We also thank Richard Hurley, Marc Pollet and Harold Robinson for reviewing an earlier version of the manuscript. Magnolia Press is acknowledged for the use of figures 4–10 previously pub-

lished in Zootaxa 857 (figs. 11 and 12). Funding was provided by an NSERC Discovery Grant to T.A. Wheeler.

LITERATURE CITED

- Becker, T. 1917–1918. Dipterologische Studien. Dolichopodidae. A. Paläarktischen Region. Nova Acta Academiae Caesareae Leopoldinisch-Carolinae Germanicae Naturae Curiosorum 102 (1917): 113–361, 103 (1918): 203–315, 104 (1918): 35–214.
- Beaulieu, F. and T. A. Wheeler. 2001. Inventaire des espèces de brachycères (Diptera) des prés de laïches (Cyperaceae, *Carex*) de la Réserve nationale de faune du lac Saint-François, Québec. Faberies 26: 57–74.
- Brooks, S. E. 2005. Systematics and phylogeny of Dolichopodinae (Diptera: Dolichopodidae). Zootaxa 857: 1–158.
- Chandler, P. J., ed. 1998. Checklists of Insects of the British Isles (New Series). Part 1: Diptera. Handbooks for the Identification of British Insects 12: 1–234.
- Cumming, J. M., B. J. Sinclair, and D. M. Wood. 1995. Phylogenetic implications of male genitalia in Diptera—Eremoneura. Entomologica Scandinavica 26: 120–151.
- Curran, C. H. 1933. Some North American Diptera. American Museum Novitates 632: 1–11.
- . 1934. The Families and Genera of North American Diptera. New York, 512 pp.
- Foot, R. H., J. R. Coulson, and H. Robinson. 1965. Family Dolichopodidae, pp. 482–530. In Stone, A., C. W. Sabrosky, W. W. Wirth, R. H. Foot, and J. R. Coulson, eds. A Catalog of the Diptera of America North of Mexico. United States Department of Agriculture, Agricultural Research Service, Agriculture Handbook, 276: iv + 1696 pp.
- Leonard, M. D. 1928 (1926). A list of the insects of New York with a list of the spiders and certain other allied groups. Cornell University Agricultural Experiment Station Memoir 101, 1,121 pp.
- Loew, H. 1857. Neue Beiträge zur Kenntniss der Dipteren. Fünfter Beitrag. Programme der Königlichen Realschule zu Meseritz 1857: 1–56.
- Lundbeck, W. 1912. Diptera Danica. Genera and Species of Flies Hitherto Found in Denmark. Part 4, Dolichopodidae. Gad, Copenhagen, 414 pp.
- McAlpine, J. F. 1981. Morphology and terminology—Adults [Chapter 2]. pp. 9–63. In McAlpine, J. F., B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood, eds. Manual of Nearctic Diptera, Vol. 1. Agriculture Canada Monograph 27, vi + 674 pp.
- Negrobov, O.P. 1991. Family Dolichopodidae. pp. 11–139. In Soós, Á. and L. Papp, eds. Catalogue of

- Palaeartic Diptera, Vol. 7. Dolichopodidae—Platypezidae, Elsevier, Amsterdam. 291 pp.
- Pollet, M. 1990. Phenetic and ecological relationships between species of the subgenus *Hercostomus* (*Gymnopternus*) in western Europe with the description of two new species (Diptera: Dolichopodidae). *Systematic Entomology* 15: 359–382.
- . 1992. Impact of environmental variables on the occurrence of dolichopodid flies in marshland habitats in Belgium (Diptera: Dolichopodidae). *Journal of Natural History* 26: 621–636.
- . 2004. A critical note on the systematic position of *Gymnopternus* (Diptera: Dolichopodidae). *Studia Dipterologica* 10: 537–548.
- Pollet, M. A. A., S. E. Brooks, and J. M. Cumming. 2004. Catalog of the Dolichopodidae (Diptera) of America north of Mexico. *Bulletin of the American Museum of Natural History* 283, 114 pp.
- Pollet, M., H. Meuffels and P. Grootaert. 1992. Dolichopodid Flies at De Mandelhoek Nature Reserve (Belgium): An example of the importance of small Nature Reserves to Invertebrates. *Bulletin et Annales de la Société royale belge d'Entomologie* 128: 213–227.
- Robinson, H. 1964. A synopsis of the Dolichopodidae (Diptera) of the southeastern United States and adjacent regions. *Miscellaneous Publications of the Entomological Society of America* 4: 105–192.
- Robinson, H. and J. R. Vockeroth. 1981. Dolichopodidae. pp. 625–639. In McAlpine, J. F., B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood, eds. *Manual of Nearctic Diptera*, Vol. 1, Agriculture Canada Monograph 27, vi + 674 pp.
- Roser, C. von. 1840. Erster Nachtrag zu dem im Jahre 1834 bekannt gemachten Verzeichnisse in Württemberg vorkommender zweiflügliger Insekten. *Correspondenzblatt des Königlich Württembergischen Landwirtschaftlichen Vereins* 37 [= n. ser., 17]: 49–64.
- Sinclair, B. J. 2000. Morphology and terminology of Diptera male terminalia. pp. 53–74. In Papp, L. and B. Darvas, eds. *Contributions to a Manual of Palaeartic Diptera* (with special reference to flies of economic importance), Vol. 1. General and Applied Dipterology, Budapest, 978 pp.
- Steyskal, G. C. 1959. *Dolichopus correus*, new species, and notes on other Dolichopodidae (Diptera, Brachycera). *Occasional Papers of the Museum of Zoology (University of Michigan)* 604: 1–6.
- Van Duzee, M. C. 1921. Notes and descriptions of a few North American Dolichopodidae (Diptera). *Psyche* 28: 120–129.
- . 1925. New species of North American Dolichopodidae (Diptera). *Psyche* 32(3): 178–189.
- Wei, L. 1997. Dolichopodidae (Diptera) from southwestern China II. A study of the genus *Hercostomus* Loew 1857. *Journal of Guizhou Agricultural College* 16(1): 29–41; 16(2): 36–50; 16(4): 32–43.
- Wiedemann, C. R. W. 1817. Neue Zweiflügler (Diptera Linn.) aus der Gegend um Kiel. *Zoologisches Magazin (Wiedemann's)* 1: 61–86.
- Yang, D. and P. Grootaert. 1999. Dolichopodidae (Diptera: Empidoidea) from Xishuangbanna (China, Yunnan province): The Dolichopodinae and the genus *Chaetogonopteron* (I). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 69: 251–277.
- Yang, D. and T. Saigusa. 1999. New and little known species of Dolichopodidae from China (VI): Diptera from Emei Mountain (I). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique Entomologie* 69: 233–250.



Brooks, Scott Edward and Wheeler, Terry Alan. 2005. "Ethiomyia, a new genus of holarctic dolichopodinae (Diptera: Dolichopodidae)." *Proceedings of the Entomological Society of Washington* 107, 489–500.

View This Item Online: <https://www.biodiversitylibrary.org/item/100258>

Permalink: <https://www.biodiversitylibrary.org/partpdf/40802>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Smithsonian

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Entomological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.