UNDESCRIBED SPECIES OF THE GENUS LIMNOPHILA FROM EASTERN NORTH AMERICA.

(Tipulidae, Diptera).

PART IV.

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The species of *Limnophila* discussed at this time are based chiefly on collections made by the writer in New York and New England. Additional material was collected by my friends, Messrs. Notman, Rogers and Walley, to whom I express my sincere thanks for this opportunity of studying the contained novelties.

Limnophila Macquart

Prolimnophila n. subgen.

Antennae with the verticils elongate, much exceeding the segments. Head not narrowed behind. Tuberculate pits vestigial, placed on the extreme cephalic margin of the praescutum. Pseudosutural foveae inconspicuous. Wings with the anterior arculus lacking or barely evident; R_{2+3+4} in alignment with *Rs* and nearly equalling it in length; R_{2+3} angulated at origin; cell *1st* M_2 very elongate, its inner end strongly arcuated and lying proximad of the other elements of the cord; *m-cu* beyond midlength of the cell.

Type of subgenus.—*Limnophila areolata* Osten Sacken (Nearctic Region).

Limnophila areolata is a common crane-fly in Northeastern North America, being especially characteristic of hemlock-yellow birch forests in June. The character of a broken arculus reminds one strongly of *Pseudolimnophila* and it may be that the present group is more correctly placed with that genus. The most conspicuous venational feature is the very large, arcuated cell *1st* M_2.

Limnophila (*Prionolabis*) **walleyi** n. sp.

Male.—Length 6.5–7.5 mm.; wing 7–8 mm.

In its small size and general appearance, resembling *L.*

[1] Contribution from the Department of Entomology, Massachusetts Agricultural College.

(*P.*) *simplex* Alexander, but in the structure of the male hypopygium more like *L.* (*P.*) *rufibasis* Osten Sacken.

Mesonotal praescutum without dark stripes, the color being blackish, dusted with yellowish gray. Femora yellow, the tips narrowly but distinctly infuscated; tibiae yellow, the tips narrowly blackened; tarsi brown, the tips of the segments darker, the outer segments uniformly blackened. In the paratype, the femoral tips are more gradually darkened. Wings with a grayish yellow ground-color; stigma small but well-defined; seams along the cord and outer end of cell *1st* M_2 narrow and inconspicuous; no heavy brown seam along vein *Cu* in cell *M*. Male hypopygium with the outer dististyle only weakly pectinate, the teeth small and variable. Inner dististyle bifid, the caudal or outer arm broader, densely set with microscopic appressed black teeth; cephalic or inner arm narrower, blackened, with a few weak erect setae. Gonapophyses appearing as flattened blades that are slightly dilated beyond midlength, the apex narrowed and produced into a long spine.

The right wing of the paratype has a weak adventitious crossvein in cell R_3 just distad of vein R_2.

Habitat: Northeastern North America.

Holotype: ♂, Brookview, Rensselaer Co., New York, June 15, 1923, (*Alexander*). *Paratype:* ♂, Bothwell, Ontario, May 23, 1925, (*G. S. Walley*). Type in the author's collection; paratype in the Canadian National Collection.

This interesting *Limnophila* is named in honor of Mr. G. S. Walley, who has added greatly to our knowledge of the Tipulidae of Ontario and Quebec.

Limnophila (*Phylidorea*) **siouana** n. sp.

Male.—Length about 6–6.5 mm.; wing 5.8–6.5 mm.

Female.—Length about 6.5 mm.; wing about 6.7 mm.

Closely allied and generally similar to *L.* (*P.*) *novæ-angliæ* Alexander, differing especially in the structure of the male hypopygium.

Antennae (♂) elongate, as in *novæ-angliæ,* if bent backward extending to opposite or beyond the base of the abdomen; scape obscure yellow; flagellum dark brown, the bases of the proximal segments narrowly pale. Head light gray, the occipital region more yellowish. Mesonotum shiny ferruginous, without distinct markings, the pleura more yel-

lowish. Legs yellow, the femoral and tibial tips narrowly darkened; tarsi chiefly black, the proximal ends of the basitarsi obscure yellow. Wings uniformly pale yellow, the stigmal region only slightly darker; veins still darker yellow. Venation: *Rs* angulated at origin; cell M_1 shorter than or subequal to its petiole; *m-cu* at near midlength of cell *1st* M_2. Abdomen ferruginous yellow, in the male the subterminal segments blackened to produce a conspicuous ring; hypopygium ferruginous. In the female, the abdomen is more uniform in color. Male hypopygium generally as in *novæ-angliæ* in the setiferous median lobe on the caudal margin of the tergite and the general structure of the dististyles, differing very notably in the structure of the aedeagus and gonapophyses. Aedeagus a large, highly compressed blade, much as in *platyphallus* Alexander and others, the gonapophyses correspondingly elongated. In *novæ-angliæ,* the aedeagus is almost linear, showing only the beginnings of compression on the distal half; gonapophyses relatively small, hook-like.

Habitat: Iowa.

Holotype: ♂, Grinnell, Poweshiek Co., May 28, 1920 (*J. S. Rogers*); Collector's No. 38. *Allotopotype,* ♀; Collector's No. 40. *Paratopotypes,* ♂ ♀, with the type. Specimens in the Alexander and Rogers Collections.

Limnophila siouana has been standing in my collection as *L. novæ-angliæ* Alexander, to which it bears a notable general resemblance, differing conspicuously in the phallosomic structures.

Limnophila (*Ephelia*) **sabrina** n. sp.

Male.—Length about 5.5 mm.; wing 5.6 x 1.7 to 6.8 x 1.8 mm.

Female.—Length about 6.5 mm.; wing 7.5 x 1.8 mm.

Rostrum and palpi brownish black. Antennae relatively elongate, especially in the male, where, if bent backward, it extends some distance beyond the wing-base; scapal segments black, the flagellar segments dark brown; all flagellar segments elongate, the basal three or four more enlarged.

Praescutum yellowish gray, with three poorly indicated brown stripes, the median stripe weakly divided. Legs with the femoral tips conspicuously blackened; bases and tips of tibiae narrowly blackened. Wings narrow in both sexes, as shown by the above measurements, the entire central third of the wing being of approximate equal width; wing-pattern relatively sparse, about as in *aprilina,* with the last dark cloud at the end of vein *2nd A.*

Abdominal segments obscure brownish yellow, the caudal margins broadly dark brown, the lateral margins more narrowly so; outer segments more uniformly darkened. Male hypopygium generally as in *aprilina,* the outer dististyle with a large lateral flange on the basal half; spinulae of the style relatively weak, the apical spine small. Inner dististyle rather conspicuously widened, without a setiferous tubercle as in *irene.* Outer apical angle of the basistyle not produced and provided with long yellow setae as is the case in *irene.*

Habitat: Northeastern North America.

Holotype: ♂, Stowe, Lamoille Co., Vermont, June 29, 1927 (*Alexander*). *Allotopotype,* ♀, June 14, 1927. *Paratopotypes,* 5 ♂ ♀, with the allotype; *paratypes,* ♂, Amherst, Massachusetts, June 5, 1924 (*Alexander*); ♂, Keene Valley, Essex Co., New York, May 26, 1920 (*H. Notman*). Types in the author's collection.

Allied to *L.* (*E.*) *aprilina* Osten Sacken and *L.* (*E.*) *irene* Alexander, differing especially in the more elongate antennae in both sexes. From *aprilina,* it differs furthermore in the narrow wings of both sexes and the uniformly darkened antennae, agreeing in the general structure of the male hypopygium. From *irene,* it differs in the elongate antennae and structure of the male hypopygium, agreeing in the narrow wings of both sexes.

Limnophila (*Dicranophragma*) **angustula** n. sp.

Male.—Length about 4.5–5.5 mm.; wing 4.8 x 1.6 to 7 x 2.2 mm.

Female.—Length about 5–6 mm.; 5–6 mm.

Allied and generally similar to *L.* (*D.*) *fuscovaria* Osten Sacken, differing especially in the narrow wings of both sexes. In *fuscovaria,* the wings of the male are unusually broad, widest opposite the level of the termination of vein *2nd A.* In *angustula,* in both sexes, the wings are more uniformly narrowed, being only slightly wider opposite the anal vein than elsewhere along the middle third of the wing, the condition being about as in the females of *fuscovaria.*

Habitat: Northeastern North America.

Holotype: ♂, Amherst, Massachusetts, altitude 275 feet, July 25, 1928 (*Alexander*). *Allotopotype,* ♀, July 15, 1928 (*Alexander*). *Paratopotypes,* 15 ♂ ♀; *paratypes,* ♂ ♀, Orono, Maine, July 8, 1913 (*Alexander*); Mt. Desert, Maine, August 29–Sep-

tember 1, 1926 (*Alexander*); Woodworth's Lake, Fulton Co., New York, July 7, 1916 (*Alexander*); Cincinnatus, New York, July 20, 1916 (*Alexander*); Ithaca, New York, August 12, 1910 (*Alexander*). Type in the Alexander Collection.

This species has been confused in collections with *fuscovaria.* The latter species is especially characteristic of Canadian woodland conditions (yellow birch and beech, with hemlock) in June and early July. *L. angustula* is a summer species, on the wing from early July into September. Mr. Edwards has collected specimens of this species while in America in 1928 and considers the species to be distinct.