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UNDESCRIBED SPECIES OF COSTA RICAN FLIES BELONGING TO THE FAMILY TIPULIDAE IN THE UNITED STATES NATIONAL MUSEUM.

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The following new species of crane-flies were included in an extensive collection of these insects taken by Señor A. Alfaro and sent to me for naming through the kindness of Dr. H. G. Dyar. The species of *Adelphomyia* extends the range of this interesting genus into the Neotropical Region. The new *Microtipula*, on the other hand, is the first species of this genus to be discovered north of Panama. The writer is indebted to Señor Alfaro and the authorities of the United States National Museum for the privilege of studying these very valuable collections. As indicated in the title, the types of all the novelties are preserved in the National Collection.

DICRANOMYIA PAMPOECILA, new species.

General coloration gray, variegated with dark brown; legs yellowish, the femora with a broad brown subterminal ring; wings subhyaline, reticulated with brown and brownish gray, this including conspicuous larger blotches at the wing-base, origin of *Rs*, at stigma and the end of vein R_{2+3} ; vein *Sc* long.

Female.—Length 6 mm.; wing 6.6 mm.

Rostrum about one-half the length of the head, dark brownish black; palpi dark brown. Antennae with the basal segment dark brown; second scapal segment and basal segments of the flagellum brownish yellow, the distal flagellar segments passing into brown. Head brown.

Mesonotal praescutum broadly brownish gray medially with two small black dots near two-thirds the length of the sclerite; lateral margins of the praescutum reddish, behind near the suture with a ring-like black marking; scutum gray, each lobe with a darker ring-like mark; scutellum gray with two basal black spots; postnotum dark brown on the posterior two-thirds, the basal third silvery pruinose. Pleura light brown, gray pruinose, variegated with brown. Halteres short, yellowish, the knobs dark brown. Legs with the coxae gray pruinose, variegated with brown; trochanters yellow; femora brownish yellow with a broad subterminal brown ring; tibiae and tarsi pale

brown, the terminal tarsal segments darker brown. Wings subhyaline, conspicuously reticulated with brownish gray and brown; cell *Sc* more yellowish; conspicuous brown blotches at the base of the wing; origin of *Rs*; largest at the tip of R_1 (stigma), extending caudad to the fork of *Rs*; tip of R_{2+3} ; paler blotches in cell *M* before midlength and in cell Cu_1 ; about a dozen narrow dark-brown reticulate markings in the costal cell, this coloration also including the costal vein; the blotch at the stigma sends four black rays to costa; the blotch at the top of R_{2+3} sends three rays to costa; conspicuous reticulations in all the cells, darker in the anterior region of the wing, paler in the posterior and anal cells; anal angle narrowly margined with brown; reticulations in the *2nd Anal* cell pale; costal, subcostal, and radial veins yellow, except in the darkened areas; remaining veins yellowish brown. Venation: *Sc* long, Sc_1 ending about opposite midlength of *Rs*, Sc_1 turned strongly into costa at the tip, Sc_2 a short distance from the tip of Sc_1 , Sc_1 alone being about equal to *r-m*; *Rs* strongly angulated at origin; deflection of R_{4+5} about two-fifths of *Rs*; cell *1st M*₂ large, pentagonal, longer than any of the veins beyond it; *m* about one-third the outer deflection of M_3 ; basal deflection of Cu_1 before the fork of *M*, the distance about equal to *m*; Cu_2 shorter than the deflection of Cu_1 .

Abdomen brownish testaceous.

Habitat.—Costa Rica.

Holotype.—Female, Tiribi, October 9, 1920 (A. Alfaro).

Type.—Cat. No. 24693, U.S.N.M.

DICRANOMYIA ALFAROI, new species.

General coloration light yellow; wings with cell *1st M*₂ open by the atrophy of the outer deflection of M_3 ; vein *Sc* long.

Male.—Length 3.2 mm.; wing 4.2 mm.

Rostrum and palpi testaceous yellow. Antennal scape yellow; flagellum broken. Head light yellow; eyes conspicuously black.

Thorax light yellow without markings. Halteres light yellow. Legs pale testaceous yellow; claws with a very long tooth at about one-third their length. Wings with a pale yellowish tinge; stigma barely indicated; veins pale. Venation: *Sc* long, Sc_2 extending to beyond midlength of *Rs*, Sc_2 near the tip of Sc_1 ; *Rs* long, gently arcuated; *r* at the tip of R_1 ; deflection of R_{4+5} about three-fifths *Rs*; cell *1st M*₂ open by the atrophy of the outer deflection of M_3 ; petiole of cell *2nd M*₂ shorter than the cell; basal deflection of Cu_1 beyond the fork of *M*, longer than Cu_2 ; *1st Anal* vein very weak; conspicuous macrotrichiae on the veins beyond the level of the origin of *Rs*.

Abdomen pale yellow.

Habitat.—Costa Rica.

Holotype.—Male, San José, October 7, 1920 (A. Alfaro).

Type.—Cat. No. 24694, U.S.N.M.

This interesting little *Dicranomyia* is very distinct from all other species known to the writer. It is named in honor of its collector, Señor A. Alfaro.

RHIPIDIA (RHIPIDIA) SUBCOSTALIS, new species.

General coloration obscure brownish yellow; mesonotal praescutum with three brown stripes; wings yellowish subhyaline with a heavy brown pattern along the costa; posterior and anal cells strongly brownish; anal angle and wing-tip subhyaline; vein *Sc* long, basal deflection of *Cu*₁ immediately beyond the fork of *M*.

Male.—Length 6.3 mm.; wing 7 mm.

Rostrum and palpi dark brown. Antennal scape dark brown, the flagellum broken. Eyes contiguous on the dorso-median line, the restricted vertex brown, light gray pruinose.

Mesonotal praescutum pale testaceous yellow with three brown stripes, the lateral stripes remote from the median stripe; scutum testaceous, the lobes brown; scutellum brown, paler basally; post-notum pale, conspicuously dark brown medially, narrowly split by a pale median line. Pleura injured by insect pests. Halteres dark brown, the base of the stem pale, the knobs large. Legs with the coxae and trochanters obscure yellow; remainder of the legs broken. Wings yellowish subhyaline with a very heavy brown pattern; a series of costal blotches, arranged as follows: At origin of wing; midlength of cell *Sc*; origin of *Rs*; tip of *Sc*; stigma and in the end of cell *2nd R*₁; the pale interspaces are very restricted; a brown wash includes most of cell *M*, excepting a blotch near the outer end; cell *R*₃ except three blotches of the ground color; most of the posterior and anal cells excepting a large area in cell *1st A* at the tip of vein *2nd A* and the conspicuous anal angle of the wing which are subhyaline; wing tip in cells *2nd R*₁, *R*₃, *R*₅, and *2nd M*₂ broadly and conspicuously pale; broad darker brown seams along the cord and outer end of cell *1st M*₂; veins brown, more yellowish in the subhyaline areas. Venation: *Sc* long, *Sc*₁ extending to about opposite two-thirds the length of *Rs*; *Sc*₂ at the tip of *Sc*₁ and about twice as long as *Sc*₁ alone; *Rs* long, gently arcuated at origin; inner end of the small cell *1st M*₂ gently arcuated, lying proximad of the inner end of cell *R*₅; *m* a little shorter than the outer deflection of *M*₃; basal deflection of *Cu*₁ just beyond the fork of *M*, about equal to *Cu*₂; *2nd Anal* vein bisinuous; longitudinal veins beyond the level of the origin of *Rs* with long macrotrichiae.

Abdominal tergites brown, the basal segments and hypopygium more yellowish; sternites obscure yellow. Hypopygium with the dorsal appendage a conspicuous hook, only slightly curved, the apex produced into a chitinized point.

Habitat.—Costa Rica.

Holotype.—Male, Tiribi, October 9, 1920 (A. Alfaro).

Type.—Cat. No. 24695, U.S.N.M.

RHIPIDIA (RHIPIDIA) LONGISPINA, new species.

Antennal flagellum with segments two to ten each with two pectinations; femora with a brown subterminal ring, terminal tarsal segments black; wings subhyaline, variegated with brown and gray, there being four brown costal blotches; basal deflection of Cu_1 before the fork of M ; spines on the ventral pleural appendage of the male hypopygium very long and slender.

Male.—Length about 4.5 mm.; wing 5.8 mm.

The type is badly crushed.

Rostrum and palpi dark brown. Antennae dark brown, the pedicels of the flagellar segments somewhat paler; flagellar segments rather short, pectinate; first flagellar segment not pectinate, merely enlarged into a hemisphere whose proximal face is slightly produced; flagellar segments two to ten each, with two pectinations which become shorter on the terminal segments; flagellar segment eleven, without distinct pectinations, the inner face slightly produced; terminal segment simple, the apex prolonged into a slender point. Head dark brown.

General coloration of the thorax dark brown without clearly defined markings. Halteres brown. Legs with the coxae and trochanters dark brown; remainder of the legs pale testaceous brown, the femora with a brown subterminal ring, the tips narrowly obscure yellow; terminal tarsal segments black; claws with a single, conspicuous, basal spine. Wing-pattern somewhat suggestive of *R. (Arhipidia) domestica*; ground-coloration subhyaline; a series of four brown costal blotches, darker in cell Sc , the third at the origin of Rs , the last at Sc ; the interspaces between the first three of these dark markings are narrower than the areas; stigma with a pale center; cord and outer end of cell $1st M_2$ seamed with gray; gray washes in the centers of all the cells beyond the cord with the exception of $1st M_2$; cubital and anal cells gray, sparsely variegated with subhyaline, the most conspicuous blotch being in cell $1st A$ opposite the end of vein $2nd A$; axillary angle not conspicuously pale as in the *subcostalis* group; veins brown. Venation: Sc long, Sc_1 ending about opposite three-fifths the length of Rs ; Sc_2 at tip of Sc_1 ; Rs long, arcuated at origin; deflection of R_{4+5} arcuated, a little less than one-third the length of Rs ; $r-m$ a little shorter than r ; cell $1st M_2$ closed; m a little shorter than the deflection of M_3 and slightly arcuated; basal deflection of Cu_1 at about one-third its own length before the fork of M .

Abdomen dark brown, the sternites paler. Male hypopygium with the proximal face of the pleurite produced proximad and caudad into an obtuse lobe; ventral pleural appendage a fleshy lobe that is

much larger than the pleurite, the beak-like prolongation of the proximal face with two very long, slender spines that are practically as long as the prolongation itself.

Habitat.—Costa Rica.

Holotype.—Male, San José, November 12, 1920 (A. Alfaro).

Type.—Cat. No. 24696, U.S.N.M.

LIMNOPHILA DICTYOPTERA, new species.

General coloration dark brown; legs light yellow, the terminal tarsal segments darkened; wings creamy-white with a conspicuous reticulate brown pattern, larger blotches at the origin of R_s , at the stigma and near the outer end of cell R_2 .

Female.—Length 9 mm.; wing 8.7 mm.

Rostrum and palpi dark brown. Antennae short, dark brown. Head brown, provided with numerous black bristles set in conspicuous dark setigerous punctures.

Mesonotum dark brown, very sparsely brown polinose, the praescutum with an indistinct capillary brown stripe. Pleura dark brown. Halteres brown. Legs with the coxae dark brown; trochanters yellowish brown; remainder of the legs light yellow, only the terminal tarsal segments dark brown. Wings creamy-white with a conspicuous dark brown reticulate pattern in all the cells, in cell Sc very reduced; larger brown blotches at the origin of R_s ; a large oblique area extending from the stigma to the fork of M ; another large area in the outer end of cell R_2 and the extreme tip of $2nd R_1$; numerous crossbars and other markings in the cells give to the wings a closely reticulated appearance; wing-tip in cells R_3 , R_5 and M_1 broadly cream-color; anal angle of the wing in cell $2nd A$ darkened; these dark crossbars include a series of about twenty-five in the costal cell; veins light brown, more yellowish in the pale areas. Venation: Sc_1 ending just beyond the fork of R_{2+3} , Sc_2 at the tip of Sc_1 , and about twice the length of the latter; R_s long, strongly arcuated at origin; R_{2+3} shorter than the basal deflection of Cu_1 ; r some distance from the tip of R_1 , the latter alone longer than the basal deflection of Cu_1 ; inner ends of cells R_3 and $1st M_2$ about in alignment; cell M_1 about as long as its petiole; cell $1st M_2$ elongate-rectangular; m about one-half the outer deflection of M_3 ; basal deflection of Cu_1 midlength of cell $1st M_2$.

Abdomen dark brown, the posterior margins of the sternites narrowly paler. Ovipositor with the valves long and slender, reddish horn-color.

Habitat.—Costa Rica.

Holotype.—Female, San José, October 6, 1920 (A. Alfaro).

Type.—Cat. No. 24697, U.S.N.M.

Limnophila dictyoptera is allied to *L. guttulatissima* Alexander, likewise from Costa Rica.

ADELPHOMYIA COSTARICENSIS, new species.

General coloration dark brown; wings brownish subhyaline, the stigma faintly darker; sparse macrotrichiae in cells *2nd R*₁ to *2nd M*₂; abdomen dark brown, the hypopygium yellowish testaceous.

Male.—Length 3.7 mm.; wing, 3.6 mm.

Rostrum and palpi dark brown. Antennae dark brown, 16-segmented, the verticils comparatively long; subterminal segments alternately long and shorter. Head dark brown.

Mesonotal praescutum dark brown anteriorly, paler behind with a darker brown median stripe; remainder of the mesonotum brown. Pleura yellowish testaceous, the anterior dorso-pleural region dark brown. Halteres pale, the knobs a little darker. Legs with the coxae yellowish testaceous; remainder of the legs pale brownish testaceous. Wings brownish subhyaline, the stigma faintly darker; veins brown. Sparse macrotrichiae in the ends of cells *2nd R*₁, *R*₂, *R*₃, *R*₅, and *2nd M*₂. Venation: *Sc*₁ a little longer than the basal deflection of *Cu*₁; *r* faint but evident, about its own length beyond the fork of *R*₂₊₃; inner end of cell *R*₅ arcuated; *r-m* longer than the basal deflection of *Cu*₁; inner end of cell *1st M*₂ strongly narrowed, the basal deflection of *M*₁₊₂ shorter than *m*; petiole of cell *M*₁ a little longer than the cell; *m* about twice the deflection of *M*₃; basal deflection of *Cu*₁ near midlength of cell *1st M*₂.

Abdomen dark brown, the hypopygium yellowish testaceous.

Habitat.—Costa Rica.

Holotype.—Male, Turrialba, August, 1920 (A. Alfaro).

Type.—Cat. No. 24698, U.S.N.M.

The discovery of a species of this genus in the Neotropical Region is of more than passing interest. Its nearest relative is *A. americana* Alexander of Northeastern North America from which it differs in the dark coloration and sparse macrotrichiae of the apical cells of the wings.

MICROTIPULA (MICROTIPULA) COSTARICENSIS, new species.

General coloration brown, the mesonotal praescutum with three darker brown stripes near the suture; nasus lacking; front yellow; dorsum of head brown; basal segments of antennal flagellum bicolorous; wings tinged with brown, the costal region strongly yellowish with alternate dark brown areas that include both the costal and subcostal cells, merging with the ground color in the radial cells; no macrotrichiae in cells of wings.

Female.—Length about 7.5 mm.; wing 8.8 mm.

Frontal prolongation of head short, clear yellow above, dark brown laterally and beneath; palpi dark brown; nasus entirely lacking. Antennae 12-segmented; scape yellow; basal four flagellar segments bicolorous, the basal two-thirds of each segment dark

brown, the terminal third yellow; terminal flagellar segments uniformly dark brown. Front and anterior part of vertex cream-yellow; remainder of dorsum of head brown.

Mesonotal praescutum pale brown, the usual stripes darker brown but indicated only near the suture, the median stripe bifid at anterior end; scutum testaceous, the lobes dark brown; scutellum testaceous; postnotum brown. Pleura brownish testaceous; a brown area on mesepisternum; mesosternum infuscated. Halteres brownish yellow, the knobs dark brown. Legs with the coxae and trochanters testaceous; remainder of legs brown, the femora paler basally. Wings with a brown tinge, variegated with yellow, dark brown and yellowish subhyaline; costal margin light yellow with four alternating blotches of dark brown, these including cells *C* and *Sc*, fading out posteriorly in cell *R*; the first brown area lies immediately beyond the level of the arculus; the third at origin of *Rs*, the second mid-distance between these last two; the fourth area occupies the end of cell *Sc*, confluent with the stigma; the yellow spaces between these brown areas are subcircular in outline; a conspicuous yellowish subhyaline area beyond the stigma in cells *R*₂ and *R*₃; a yellowish subhyaline area in the end of cell *M*, indistinctly connected with the last yellow costal area; the space behind vein *Cu* yellow; indistinct infuscations at base, midlength and apex of this yellow cubital area; the subhyaline areas elsewhere on wing-surface are very small, most evident in the ends of the posterior and 1st Anal cells; veins dark brown; no macrotrichiae in cells of wing. Venation: *Sc*₁ atrophied, *Sc*₂ ending before the fork of the long, straight *Rs*; tip of *R*₂ atrophied; petiole of cell *M*₁ longer than *m*; *m-cu* obliterated.

Abdomen brown, the basal tergites yellowish, the caudal margins of the tergites narrowly paler brown. Ovipositor with the valves horn-colored.

Habitat.—Costa Rica.

Holotype.—Female, Atirro, October 24, 1920 (A. Alfaro).

Type.—Cat. No. 24699, U.S.N.M.

Microtipula costaricensis differs notably from the only other described species of the subgenus, *M. (M.) amazonica* Alexander (Brazil-British Guiana), in the coloration of the body and wings. In its general appearance it agrees more closely with the subgenus *Eumicrotipula* Alexander in which the cells of the wing are densely provided with macrotrichiae.