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UNDESCRIBED SPECIES OF NEARCTIC TIPULIDAE
(DIPTERA). III.

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At this time I am characterizing various species of the genus *Tipula* Linnaeus, derived from several sources, as follows: Two species from California, discovered during the progress of a survey of the cave fauna under the leadership of Mr. Richard E. Graham, in collaboration with Dr. Willis J. Gertsch and Mr. R. de Saussure; two further species from Maine and Newfoundland, taken by Mr. David L. Carson and Dr. A. E. Brower; and a further very interesting crane fly discovered by Mr. James Baker in the Steens Mountains, Oregon. The disposition of the type specimens and further acknowledgements are indicated in the text.

Tipula (Trichotipula) gertschi, n.sp.

General coloration of mesonotum dark brown, praescutum with four obscure brownish yellow stripes; antennae of male relatively long, flagellum dark brown; claws of male simple; wings faintly darkened, stigma darker brown; macrotrichia in outer fourth of cell R_5 ; no stigmal trichia; abdominal tergites dark brown, bases restrictedly more yellowish; male hypopygium with tergal lobes entirely without blackened spicules, ninth sternite with two pencils of long black setae, inner dististyle with lower beak blackened.

MALE. Length about 8 mm.; wing 9 mm.; antenna about 3.9 mm.

FEMALE. Length about 12 mm.; wing 11.5 mm.

Frontal prolongation of head short and stout, the nasus virtually lacking; dorsum brownish yellow, sides brownish black, midventral area pale; palpi dark brown, terminal segment elongate, brownish yellow. Antennae of male relatively long; scape and pedicel slightly paler than the dark brown flagellum; flagellar segments subcylindrical, the basal enlargements feebly indicated, verticils shorter than the segments; terminal segment very small, globular, about one-third the verticils. Head medium brown.

Pronotum obscure yellow, scutum restrictedly patterned with pale brown. Mesonotal praescutum brown with four obscure brownish yellow stripes, the intermediate pair slightly broader than the dark median interspace, the latter narrowed to a point behind, very narrow in the type; posterior sclerites of notum dark brown, with vague indications of a capillary median paler vitta extending from suture to abdomen. Pleura brown, dorsopleural membrane whitened. Halteres infuscated, base of stem narrowly yellowed. Legs with coxae pale brown basally, apices restrictedly paler; tro-

1. Amherst, Massachusetts.

chanters yellow; remainder of legs medium brown; claws simple. Wings faintly darkened; stigma oval, darker brown; restricted obliterative areas before stigma and across base of cell 1st M_2 ; pale longitudinal lines in cell 1st A and outer end of R ; veins light brown. Macrotrichia in outer fourth of cell R ; no stigmal trichia; medial veins chiefly glabrous, trichia present on most of M_1 , outer end of M_2 and in cases at tip of M_3 . Venation: R_s shorter than $m-cu$; petiole of cell M_1 about one-half longer than m .

Abdominal tergites dark brown, proximal ends restrictedly more yellowed; sternites light brown, their posterior borders narrowly yellowed. Male hypopygium with posterior border of tergite having a broad U-shaped emargination to form relatively narrow obtuse lobes, margins of the latter entirely without spicules or spinoid setae, as in other species, having numerous very small and delicate setae only. Ninth sternite on either side with a brush or stout pencil of about twenty long black setae. Outer dististyle about twice as long as broad, widest before midlength, setae long but relatively sparse. Inner dististyle with beak long and narrow, tip obtuse; lower beak and margin blackened, sclerotized; outer surface of basal half with numerous erect yellow setae. Aedeagus very long and stout, as common in the subgenus.

HABITAT. California (Calaveras County).

HOLOTYPE, alcoholic ♂, Buckeye Cace, September 4, 1961 (W. J. Gertsch); No. 1976. ALLOTYPE, ♀, Cave of the Catacombs, September 1, 1961 (R. E. Graham); No. 1893, in Alexander Collection. Type in American Museum of Natural History.

Named in honor of the collector, Dr. Willis J. Gertsch, distinguished student of the Arachnida. The fly is readily told from other generally similar species by having the tergal lobes of the male hypopygium entirely without spicules and in the long setal pencils on the ninth sternite. The most similar such species is *Tipula* (*Trichotipula*) *cazieri* Alexander, with other regional allies including *T. (T.) furialis* Alexander and *T. (T.) sayloriana* Alexander.

Tipula (*Yamatotipula*) *carsoni*, n.sp.

Size small (wing of male about 11 mm.); mesonotum gray, praescutum with four narrow brownish gray stripes that are narrowly margined with brown, pleura light gray, dorsopleural membrane yellow; antennae of male relatively long, flagellum black; wings weakly infuscated, prearcular and costal fields more yellowed; abdominal tergite yellow, with two broad dark brown longitudinal stripes; male hypopygium with the tergite produced into two flattened blades that are separated by a linear split, each blade on its inner and apical parts with slender spinoid setae; inner dististyle with beak large, outer margin strongly crenulated or scalloped; outer basal lobe a long narrow flattened blade, the apex truncate; gonapophysis a small slender blade.

MALE. Length about 9.5 - 10 mm.; wing 10.5 - 11.2 mm.; antenna about 4.2 - 4.3 mm.

Frontal prolongation of head yellowed, light gray pruinose above at base, nasus elongate; palpi with basal segment brown, remainder brownish black. Antennae with scape and pedicel obscure yellow; first flagellar segment elongate, brownish yellow, remainder of flagellum black, in the paratype, the extreme tips of the more proximal segments yellowed, outer segments uniformly blackened; segments feebly incised, much longer than the verticils. Head in front whitened, brownish gray behind, with indications of a darker median line; vertical tubercle small; setae of vertex short, black, of occiput longer, yellow.

Pronotum brownish gray, paler laterally. Mesonotal praescutum with humeral and lateral borders gray, disk with four narrow brownish gray stripes that are narrowly margined with brown, interspaces pale brown; scutum light gray, each lobe with two darker brown areas; scutellum brown, posterior border more yellowed; mediotergite light gray, posterior border narrowly darker; pleurotergite grayish brown, dorsal katapleurotergite clearer gray. Pleura light gray; dorsopleural membrane yellow. Halteres with stem brownish yellow, knob dark brown. Legs with coxae light gray; trochanters yellow; femora and tibiae brownish yellow, tips narrowly brownish black; tarsi passing into black. Wings weakly infuscated, prearcular field and cells *C* and *Sc* more yellowed, especially the latter; stigma brown, proximal end paling to yellow; a very restricted brown cloud over anterior cord; small obliterative areas before stigma and across base of cell *1st M*₂, the latter extending into apex of cell *R*; veins brown, more yellowish brown in the brightened areas. Venation: *R*₂ relatively long; cell *1st M*₂ small; cell *M*₁ deep, its petiole in cases to twice *m*.

Abdominal tergites with the restricted median ground yellow, with two broad dark brown sublateral longitudinal stripes, lateral margins paler yellow; sternites yellow; subterminal segments darkened to form a narrow ring; outer end of ninth segment, with the appendages yellowed. Male hypopygium with the tergite produced into two flattened blades, separated by a linear split, the apical and mesal parts of each blade with slender black spinoid setae. Outer dististyle unusually small, long-oval, with yellow setae; inner style much larger, the large beak yellow, gently arcuated, apex obtuse; outer margin crenulated or scalloped, forming about four lobes, with a strong pale seta in the notch of each crenulation, these gradually decreasing in size outwardly; face of beak conspicuously reticulated, with pale setae; outer basal lobe a long narrow flattened blade, apex truncate, the upper angle slightly produced. Phallosome with gonapophyses appearing as small slender flattened blades .

HABITAT. Newfoundland, Maine.

HOLOTYPE, ♂, Aspen Brook Rest Camp, Newfoundland, 300

feet, in swampy area along small lateral rills of brook at camp, July 17, 1961 (D. L. Carson). PARATYPE, ♂, Rangeley, Franklin Co., Maine, July 21, 1961 (A. E. Brower).

I take great pleasure in naming this fly for Mr. David L. Carson, companion on collecting trips to Alaska and Newfoundland, who has aided greatly in making known the crane flies of these areas. It most resembles species such as *Tipula* (*Yamatotipula*) *aprilina* Alexander, *T. (Y.) defecta* Walker, and *T. (Y.) sulphurea* Doane, differing from all in the structure of the male hypopygium, particularly the tergite and dististyles.

Tipula (*Platytipula*) *perhirtipes*, n.sp.

Closely allied to *Tipula* (*Platytipula*) *cunctans* Say; legs stout, very conspicuously hairy, including all segments from the femora through the third tarsal segment.

FEMALE. Length about 17 mm.; wing 14 mm.; antenna about 3.1 mm.

Frontal prolongation of head light gray, clearer dorsally; nasus elongate; palpi brown, terminal segment short, black. Antennae with scape and pedicel light brown; proximal four segments of flagellum brownish yellow, their bases vaguely darker, outer segments passing into black; terminal segment small, subglobular. Head gray, vertex strongly infuscated.

Pronotum gray. Mesonotal praescutum gray, with three brown stripes; scutum gray, lobes patterned with brown; scutellum gray, darkened medially, parascutella and postnotum light gray. Pleura whitish gray, dorsopleural region yellowed. Halteres dark brown. Legs of female relatively short and stout; coxae whitish gray; trochanters yellow; femora and tibiae brownish yellow, tips narrowly blackened, more extensive on forelegs; tarsi passing into black; legs conspicuously hairy, with unusually long and abundant erect setae, including all segments with the exception of coxae and outer two tarsal segments. Wings brownish yellow, cells C and Sc dark brown, stigma yellowed; veins dark brown. Veins unusually glabrous, beyond cord with only two or three on vein $R_4 + 5$. Venation: Cell 1st M_2 relatively short, less than twice the petiole of cell M_1 .

Abdomen obscure brownish yellow, patterned with darker, most evident as an interrupted median tergal stripe on proximal five segments, less evident elsewhere.

HABITAT. Maine (Kennebec County).

HOLOTYPE, ♀, Vassalboro, in bog, September 30, 1961 (A. E. Brower).

Tipula (*Lunatipula*) *grahamina*, n.sp.

Mesonotal praescutum with five dark stripes, the lateral pair broad, intermediate three narrow, separated by delicate yellow lines; no nasus; femora brownish yellow, tips narrowly dark brown, claws simple, wings pale brown, stigma darker, whitened obliterated.

ative areas before stigma and in cells *R*, 1st *M*₂ and *M*₃; male hypopygium with posterior border of tergite broadly emarginate, with a low median lobe at base of notch; aedeagus and apophyses generally similar in shape, appearing as slender blades; eighth sternite with posterior margin simple, the midregion with about 20 moderately long setae.

MALE. Length about 13-17 mm.; wing 12.5-17 mm.; antenna about 4.5-6.5 mm.

Frontal prolongation of head light brown, subequal to remainder of head; nasus lacking; palpi brown, terminal segment paler outwardly. Antennae with scape and pedicel yellow, flagellum brown, their segments shorter than the verticils. Head brown.

Pronotum brown. Mesonotal praescutum with broad sublateral brown stripes the median region with three narrow brown lines that are separated by equally narrow yellow vittae; scutal lobes dark brown, median area paler; scutellum brown, paler apically, with a vague darker central area; postnotum brown, lateral margins of mediotergite more yellowed, pleurotergite brownish yellow. Pleura chiefly dark brown; dorso-pleural region pale yellow. Halteres with stem pale, knob dark brown. Legs with fore and middle coxae yellow, restrictedly darkened at bases, posterior coxae more uniformly brown; trochanters yellow; femora brownish yellow, tips narrowly dark brown; tibiae and tarsi yellowish brown, terminal segment blackened; claws small, simple. Wings pale brown, stigma darker, cell *Sc* yellowed; white oblitative areas before stigma, outer end of cell *R* and bases of cells 1st *M*₂ and *M*₃; veins light brown. Venation: *Rs* about one-half longer than *m-cu*; petiole of cell *M*₁ about one-half longer than *m*.

Abdominal tergites brownish yellow, laterally with large brown spots; basal sternites more uniformly light yellow, outer segments and hypopygium dark brown. Male hypopygium with the tergite transverse, posterior border with a broad U-shaped emargination, with a small secondary median notch, beneath which is a low truncate sclerotized lobe; lateral lobes narrowly obtuse, margins virtually glabrous. Outer dististyle dilated outwardly, apex obliquely truncate, surface and margins with abundant setae, some very long; inner dististyle with beak narrowly obtuse, lower beak broadly so; posterior crest produced; outer basal lobe broad and conspicuous, tip obtuse. Phallosome with both the aedeagus and apophyses appearing as slender blades, narrowed to acute points, the former longer. Eighth sternite with posterior margin simple, without lateral lobes or armature; median region membranous, with about 20 moderately long setae.

HABITAT. California (Plumas and Shasta Counties).

HOLOTYPE, alcoholic ♂, Kloppenberg Cave, Plumas County, September 19, 1959 (R. E. Graham). PARATYPES, alcoholic ♂, Hall City Cave, Plumas County, August 1959 (R. de Saussure); No. 1285; alcoholic ♂, Samwel Cave, Shasta County, June 15,

1959 (R. E. Graham); No. 1162, in Alexander Collection. Type in American Museum of Natural History.

This interesting crane-fly is named for Mr. Richard E. Graham, Department of Mammalogy, American Museum of Natural History, who is conducting the present survey of the fauna of California caves. In the lack of a nasus and pattern of the mesonotal praescutum, the species agrees with *Tipula (Lunatipula) usitata* Doane, differing in further coloration and in all hypopygial details. *T. (L.) biunca* Doane likewise lacks the nasus but differs more decisively in hypopygial structure.

Tipula (Lunatipula) productisterna, n.sp.

Belongs to the *unicincta* group; mesonotal praescutum with three gray stripes, the interspaces brown, the intermediate pair more clearly so; antennae short, flagellum black; halteres yellowed, base of knob infuscated, legs brownish yellow, tips of femora and tibiae darkened, tarsi black, claws long-spined; wings strongly yellowish brown, scarcely patterned; abdomen yellow, tergites trivittate with dark brown, outer segments darker brownish yellow; male hypopygium with tergal lobes only slightly produced, rounded; ninth sternite produced into two long fingerlike lobes that are directed inwardly; outer basal lobe of inner dististyle long and fingerlike; phallosome with symmetrical apophyses; eighth sternite large and sheathing, outer lateral angles bearing a single powerful fasciculate bristle; median region of emargination with a glabrous depressed-flattened pale plate that is produced into two divergent blades.

MALE. Length about 16 mm.; wing 17 mm.; antenna about 3.4 mm.

Frontal prolongation of head buffy yellow. Antennae relatively short; scape and pedicel yellow, flagellum black; flagellar segments very feebly incised, only slightly exceeding their longest verticils. Head brownish yellow, clearer yellow medially behind.

Pronotal scutum light brown, scutellum light yellow, clearer medially. Mesonotal praescutum with three brownish gray stripes, the interspaces clearer brown, best-indicated as long narrow lines on either side of the median stripe; posterior sclerites of notum brownish gray, central region of scutum narrowly yellowed. Pleura brownish gray; dorsopleural membrane light yellow. Halteres yellowed, including most of the knob, the base of latter infuscated. Legs with fore coxae infuscated, the remaining pairs and all trochanters more yellowed; femora and tibiae brownish yellow, tips narrowly darkened; tarsi black, claws long-spined. Wings strongly yellowish brown, darker on costal region, more yellowed on proximal half, stigma darker brown; obliterative areas conspicuous, yellowish white, crossing cell 1st M_2 into the adjoining cells; veins light brown. Venation: R_s long, more than three times $R_2 + 3$; petiole of cell M_1 shorter than m ; distal section of Cu_1 strongly decurved at margin.

Abdomen yellowed, tergites trivittate with dark brown, the stripes narrowly interrupted by pale posterior borders, lateral margins broadly pale; outer segments, including the large hypopygium, darker brownish yellow. Male hypopygium with the tergite transverse, lateral lobes irregularly rounded, only slightly produced, median region completely divided. Ninth sternite on either side conspicuously produced into a fingerlike lobe, broad-based, bent inwardly; a further more ventral elongate lobe, its outer margin and apex with abundant short yellow setae. Outer dististyle a small oval blade on margin of the large inner style, this with the beak short-triangular; outer basal lobe narrowed into a fingerlike pale lobule. Phallosome symmetrical, the gonapophyses moderately large, spinelike, darkened, gradually narrowed into acute points. Eighth sternite large and sheathing, outer angles each with a single powerful fasciculate bristle; median region of emargination with a depressed-flattened pale plate, its outer margin produced into two divergent blades, separated by a U-shaped notch.

HABITAT. Oregon (Harney County).

HOLOTYPE, ♂, Fish Lake Steens Mountains, 7,200 feet, July 14, 1962 (James Baker).

This interesting fly was taken by my long time friend James Baker, of Baker, Oregon, to whom I am indebted for many Tipulidae over the past several years. Other regional members of the *unicincta* group that have the tergal lobes only slightly produced include *Tipula* (*Lunatipula*) *mormon* Alexander and *T. (L.) rabiosa* Alexander, both of which have the hypopygial structure quite different, especially in the lack of the long fingerlike lobes of the ninth sternite as found in the present fly. Other species of *Tipula* with somewhat comparable elongate digitiform lobes have these on the basistyle rather than on the ninth sternite.