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NEW NEARCTIC CRANE-FLIES (TIPULIDAE, DIPTERA). PART XXV.

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The preceding instalment under this title was published in 1945 (Can. Ent., 77: 140-144). At this time I am including the description of five species of the genus *Tipula* from Washington, Oregon and California, collected by Messrs. T. H. G. Aitken, Mont A. Cazier, J. A. Macnab and A. L. Melander, to whom I am greatly indebted for the privilege of studying very extensive series of Tipulidae sent by them. Except where indicated to the contrary, the types of the novelties are preserved in my collection.

***Tipula* (*Lunatipula*) *carunculata* n. sp.**

Belongs to the *impudica* group, allied to *diversa* and *lyrifera*; size relatively large (wing, male, 18 mm.); general coloration of thorax gray, the praescutum with four reddish brown stripes; legs brownish yellow, the outer tarsal segments blackened; wings infuscated, particularly in the apical and posterior fields; oblitterative bands at cord and beyond stigma; male hypopygium with the median blade of tergite depressed, the canthi conspicuously toothed or provided with carunculae; inner dististyle with the outer basal lobe a narrow compressed-flattened blade, not twisted as in *lyrifera*.

*Male*. Length about 19 mm.; wing 18 mm.; antenna about 5.7 mm.

Frontal prolongation of head brownish yellow; nasus reduced to a blunt tubercle; palpi with basal segment obscure yellow, the succeeding segments slightly darker, the terminal one brownish black. Antennae with the scape and pedicel yellow; first flagellar segment chiefly yellow, narrowly blackened above, remainder of flagellum black; flagellar segments moderately incised; longest verticils a little less than the segments. Head light brown, grayish pruinose, more heavily so on front, center of vertex and narrow posterior orbits; median line of vertex with a further capillary central brown vitta.

Pronotum gray, restrictedly patterned with pale brown. Mesonotal praescutum with the ground color gray, with four reddish brown stripes, the intermediate pair representing the lateral borders of the broader brownish gray central area; interspaces with conspicuous black setae; posterior sclerites of notum gray, the centers of the lobes vaguely patterned with pale brown. Pleura brownish gray; dorsopleural membrane yellow. Halteres with stem obscure yellow, brighter at base; knob darkened, the apex slightly paler. Legs with the coxae yellowish gray; trochanters yellow; remainder of legs brownish yellow, the outer tarsal segments black; claws toothed. Wings with the ground color of the apical and posterior fields rather strongly infuscated, the central basal and coastal portions more yellowed; stigma pale brown; outer radial field, *m-cu* and distal portion of *Cu<sub>1</sub>*, with axillary border, faintly more darkened; rather conspicuous oblitterative areas at cord and beyond stigma, the former almost traversing the wing as a very narrow border to vein *M<sub>4</sub>*; vein *1stA* and proximal portion of the cell conspicuously whitened; veins brown, more brownish yellow in the brightened fields. Venation: *Rs* about two and one-half times *m-cu*; *R<sub>1+2</sub>* entire; *m* subequal to petiole of cell *M<sub>1</sub>*.

Abdomen obscure yellow, the tergites with a narrow median stripe, broadly interrupted at the posterior portions of the segments, and with very restricted sublateral darkenings, best indicated near the bases of tergites three to six, inclusive; lateral tergal borders broadly gray, the caudal margins more narrowly pale; hypopygium large and conspicuous, yellow. Male hypopygium with the ninth tergite transverse, the median blade (*subtergal process* of Dietz) more or less depressed when flattened on a slide; canthi conspicuously toothed or provided with carunculae, the more apical ones larger and more conspicuous; lateral inflexed portion of tergite appearing as a broadly flattened, obtusely rounded

blade. Margin of basistyle with a strong blackened slightly curved point. Outer dististyle an elongate-triangular lobe, narrowed to the very slender apex. Inner dististyle with its outer basal lobe a narrow compressed-flattened blade; not twisted as in *lyrifera*, gradually narrowed to the slightly decurved obtuse tip; main body of style shorter than the lobe, both the beak and lower beak blackened; dorsal crest relatively inconspicuous, separated from the outer basal lobe by a deep incision. Eighth sternite short, narrowed outwardly, the caudal border broadly truncated and fringed with numerous long yellow setae.

*Habitat.* California.

*Holotype.* ♂, Kingsbury Grade, Mono Co., May 27, 1939 (Mont Cazier).

The only other described members of the *impudica* group that are allied to the present fly are *T. (L.) diversa* Dietz and *T. (L.) lyrifera* Dietz both of which have the outer basal lobe of the inner dististyle of the male hypopygium produced somewhat as in this species but with all details of the hypopygium distinct, particularly the tergite and inner dististyle.

### ***Tipula (Lunatipula) mariposa* n. sp.**

Size medium (wing, male, 15 mm. or more); mesonotal praescutum dark gray, with four poorly indicated brown stripes; wings with an unusually dark brown tinge; male hypopygium with the tergite on either side produced into an unequally bifid fleshy lobe; basistyle with posterior margin blackened and conspicuously bispinous; inner dististyle long and narrow, the posterior margin of the base produced into two blackened spinous points, the outer basal lobe pale and fleshy.

*Male.* Length about 13.5-15 mm.; wing 15-17 mm.; antenna about 3.8-4.2 mm.

*Female.* Length about 17-18 mm.; wing 15.5-16 mm.

Frontal prolongation of head rich chestnut brown; nasus elongate; palpi black. Antennae (male) of moderate length; scape and pedicel light yellow, first flagellar segment brown, remainder of flagellum black; flagellar segments only moderately incised; longest verticils about equal to the segments. Head dark gray, clear gray on the front and narrow orbits; a vague indication of a still darker median line on vertex.

Pronotum brownish gray. Mesonotal praescutum dark gray, with four poorly indicated brown stripes, the median ground vitta more brownish gray; setae of interspaces black and relatively conspicuous; posterior sclerites of notum gray, the scutal lobes vaguely patterned with darker. Pleura gray, the dorso-pleural membrane obscure yellow. Halteres with the stem brown, its base narrowly yellow; knob darkened, its apex restrictedly paler. Legs with the coxae gray; trochanters obscure brownish yellow; femora obscure yellow, the tips narrowly brownish black, the amount subequal on all legs; tibiae and basitarsi obscure brownish yellow, the tips weakly darkened; remainder of tarsi black; claws (male) toothed. Wings with an unusually dark brown tinge, the stigma and costal region still darker; a tiny dark cloud at origin of *Rs*; a very conspicuous whitish obliterative area at and before cord, extending from before stigma in cell  $R_1$ , across cell 1st  $M_2$  into the basal fourth of cell  $M_3$ , insensibly interrupted by narrow seams over the veins; veins dark brown. Venation: *Rs* about two and one-half times the relatively short *m-cu*;  $R_1+2$  entire.

Abdominal tergites gray, the lateral borders broadly obscure yellow, posterior border of second tergite narrowly gray; dark brown sublateral spots on basal portion of tergites two to six inclusive; setigerous punctures of tergites black, conspicuous; sternites more brownish yellow, the large conspicuous hypopygium likewise of this color. Ovipositor of normal conformation; genital shield black; cerci relatively broad, compressed-flattened, the tips obtusely rounded; hy-

povalvae short and stout, with blunt tips. Male hypopygium with the tergite and basistyle entirely cut off from the sternite by sutures; accessory sclerite of ninth sternite distinct, elongate. Ninth tergite of peculiar conformation, on either side produced into an unequally bifid fleshy lobe, with a further small lateral lobule on caudal margin nearer the side. Ninth sternite with the posterior lobe low and hemispherical, with elongate pale setae, those of ventral portion longer and more crinkly. Basistyle relatively narrow, the posterior margin blackened and conspicuously bispinous; outer spine more roughened, on its upper margin before apex with a small denticle. Outer dististyle a very small pale fleshy lobe at near midlength of dorsal face of inner style. Inner dististyle long and narrow; posterior margin of the base or stem of main body produced into two blackened spinous points, one basal, the other subapical; outer basal lobe pale and fleshy, provided with long conspicuous setae (exact outlines difficult to see because of its lying beneath the spinous lobes of basistyle). Eighth sternite moderately long and sheathing, conspicuously armed with hair-brushes, including an outer or more ventral row, relatively sparse but of long setae, two of the more outer ones on either side enlarged and spinoid; an inner group of setae bend slightly mesad to become decussate with their fellows of the opposite side; besides the above, a semicircular lobe or flap lying dorsad of the lateral portions of the lobe is fringed with abundant elongate crinkly setae, the general effect being that of a double row of bristles.

*Habitat.* California.

*Holotype.* ♂, Mormon Bar, Mariposa Co., June 6, 1940 (T. H. G. Aitken).

*Allotopotype.* ♀. *Paratopotypes.* Several ♂♂, ♀♀, with the types.

This fly requires comparison only with *Tipula (Lunatipula) yosemite* n. sp. The two species are obviously closely allied, differing from one another in important hypopygial characters, including the tergite, basistyle and inner dististyle.

### ***Tipula (Lunatipula) yosemite* n. sp.**

Allied to *mariposa*; size small (wing, male, under 14 mm.); wings with a strong brownish tinge, restrictedly patterned with darker brown and with a very conspicuous obliterative band before cord; male hypopygium having the tergite with a narrow V-shaped median notch, the broad lobes slightly armed and corrugated; basistyle with the entire outer portion produced into a sclerotized plate that bears a short marginal beak and other short spinous points; inner dististyle with the anterior lobe massive, the beak very obtuse, blackened; eighth sternite with the caudal border sinuously truncate, conspicuously fringed with long setae.

*Male.* Length about 12 mm.; wing 13.5 mm.; antenna about 4 mm.

Generally similar to *mariposa*, differing especially in the structure of the male hypopygium. Size relatively small. Antennae with scape and pedicel yellow, first flagellar segment yellow, narrowly infuscated above; remainder of flagellum almost unicolorous brownish black; flagellar segments with the basal enlargement relatively small, the longest verticils nearly equal in length to the segments. Tips of femora and tibiae very narrowly and vaguely darkened; claws toothed. Wings with a strong brownish tinge, restrictedly patterned with pale brown and with the obliterative band at cord unusually conspicuous; the darkened areas include the stigma and very reduced spots at origin of *Rs*, end of *Sc*, and at seams along the cord; the obliterative band extends from vein *R* across cell 1st *M*<sub>2</sub> into cell *M*<sub>3</sub>, less evidently following along vein *M*<sub>4</sub>, virtually to the posterior border.

Male hypopygium with the ninth tergite elongate, the caudal margin with a narrow V-shaped median notch, the broad lateral lobes variously armed and modified, the inner portion adjoining the notch produced into a small darkened lobule, the more extensive outer portion a low flattened lobe that is produced into a slender sclerotized point near its outer angle and with various other

points and setiferous tubercles. Ninth sternite with the appendage appearing as a somewhat triangular cushion, provided with abundant setae, those at the lower portion unusually dense. Basistyle with the entire outer portion produced into a sclerotized plate, the apex of which bears a small marginal beak, with a further small point on face near tip; more basally, the plate is further produced into spinous points. Outer dististyle very tiny, pale, bearing only about six setae. Inner dististyle with its massive anterior portion, including the beak, very blunt and obtuse, the corrugated dorsal crest more or less produced backward; outer basal lobe a small simple entirely pale fleshy lobe, almost as in *mariposa*. Gonapophyses consisting of two flattened paired slender arcuated plates, widest at near midlength, the slender apices each with an acute spine on the lower margin before tip. Eighth sternite with its caudal border sinuously truncated, fringed with conspicuous setae, about three on either side near inner portion of lateral lobe unusually strong and powerful, their tips decussate; numerous smaller and less modified setae fringing the caudal border, lacking on the small U-shaped median notch; on either lateral angle a more nearly detached hemispherical lobe bearing about a score of long setae that are produced directly backward, not decussate.

*Habitat.* California.

*Holotype.* ♂, Mormon Bar, Mariposa Co. June 6, 1940 (T. H. G. Aitken). *Paratopotype.* ♂.

The present fly is unquestionably allied to *Tipula (Lunatipula) mariposa* n. sp., differing conspicuously in most structures of the male hypopygium, particularly the tergite, basistyle and inner dististyle.

### ***Tipula (Lunatipula) aurantionota* n. sp.**

Allied to *usitata*; size small (wing, male, 13 mm. or less); nasus lacking; thorax fulvous orange, including the usual four praescutal stripes and the scutal lobes; femora brownish yellow, the tips narrowly blackened, preceded by a clearer yellow ring; wings with a weak brownish yellow tinge, restrictedly patterned with dark brown and clear cream-colored areas, the most conspicuous of the latter being the obliterative band before the cord; abdomen yellow, the tergites with a narrow median brown stripe; male hypopygium with the beak of the inner dististyle long-produced and with the tip strongly delimited from the remainder by a ventral notch; phallosome consisting of various spinous points, including a flattened blade that terminates in two such spines, the upper point more slender.

*Male.* Length about 11-12.5 mm.; wings 11.5-13 mm.; antenna about 3.3-3.4 mm.

Frontal prolongation of head dull brownish yellow, nearly as long as the remainder of head; nasus lacking; palpi with basal segment obscure yellow, second segment light brown, outer segments passing into black. Antennae with scape and pedicel yellow, flagellum black; basal enlargements of flagellar segments feebly indicated; longest verticils a little exceeding the segments. Head light brown, more brownish yellow in front; vertical tubercule low; holotype with a narrow dark median line on vertex, this is not indicated in the paratype.

Entire thorax chiefly fulvous orange, including the usual four praescutal stripes and scutal lobes, the sides of the notum a little more obscured. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters yellow; femora brownish yellow, the tips narrowly but conspicuously blackened, preceded by a clearer yellow ring; tibiae and basitarsi yellow, the tips darkened; remainder of tarsi black; claws (male) toothed. Wings with a very weak brownish yellow tinge, the prearcular and costal fields clearer yellow; stigma oval, darker brown; clear cream-colored areas occur as a band before cord, crossing cell 1st  $M_2$  and almost reaching the posterior wing margin along vein  $M_4$ ; a small post-

stigmal brightening; a triangular spot at margin in cell 1st *A* near vein 2nd *A*, with a further brightening near outer end of vein 1st *A*; veins brown, more brownish yellow in the brightened fields. Venation: *Rs* long, about two and one-half times *m-cu*; tip of vein  $R_{1+2}$  thin but persistent; *m-cu* at or before fork of  $M_{3+4}$ .

Abdomen yellow, the tergites with a narrow median brown stripe. Male hypopygium having the caudal margin of the ninth tergite with a broad V-shaped notch, with a further narrow emargination at its base, this latter produced cephalad into a deep median dorsal groove; lobes of tergite more heavily thickened, obtusely rounded. Ninth sternite with the appendage small, simple, tipped and fringed with elongate setae. Outer dististyle dark-colored, very broadly triangular in outline, as in the subgroup. Inner dististyle with the beak much prolonged and readily breaking at the point of narrowing; dorsal crest conspicuous, yellow. Phallosome consisting of conspicuous blades and spinous points, including one blade that terminates in two such spines, the upper point more slender. Eighth sternite narrowed outwardly, the posterior border pale, without lateral lobes; on either side of the median line with a brush or pencil of about 15 to 16 long yellow setae, these not decussate.

*Habitat.* Oregon.

*Holotype.* ♂, Boyer Station, near McMinnville, Yamhill Co., August 1, 1935 (Coll. R. E. R.); high hemlock association 6; James Macnab No. 111.  
*Paratopotype.* ♂.

Although it is very different in color from the other species that center around *Tipula (Lunatipula) usitata* Doane, the present fly undoubtedly falls in this complex of forms. The other species are dark-colored, the praescutum with five dark brown stripes, there being a clearly defined median vitta in addition to the usual four stripes.

### ***Tipula (Lunatipula) snoqualmiensis* n. sp.**

General coloration of mesonotum light gray, with three poorly defined light brown stripes that are delimited by narrow reddish brown borders, more distinct on the broad median stripe; frontal prolongation of head yellow, sparsely pruinose, nasus short; antennae with scape and pedicel clear light yellow, flagellar segments beyond the second brownish black; head gray; femora and tibiae yellow; claws (male) toothed; wings subhyaline, with a conspicuous dark and light brown pattern, variegated by subhyaline before and beyond the stigma; basal abdominal segments pale yellow, the tergites with indications of a pale brown median stripe; outer abdominal segments more uniformly light brown; male hypopygium with the lateral tergal lobes long-produced, the median notch with a compressed tooth.

*Male.* Length about 17.5-18 mm.; wing 18-18.5 mm.; antenna about 4.5 mm.

Frontal prolongation of head obscure yellow, sparsely light gray pruinose; nasus short and blunt; palpi with basal two segments yellow, outer segments black. Antennae with scape and pedicel clear light yellow; first and second flagellar segments a trifle more obscure yellow, the remaining segments brownish black, the bases a little more darkened; flagellar segments moderately incised; verticils long and conspicuous, subequal in length to the segments. Head gray, clear light gray on front; darker gray behind, on either side of vertex with conspicuous black bristles.

Pronotum light brown, sparsely pruinose. Mesonotal praescutum with the ground light gray, with three poorly defined light brown stripes that are delimited by narrow reddish brown borders, those of the median stripe very distinct; scutum light gray; each lobe with two reddish brown areas; posterior sclerites of notum gray, parascutella more yellowed; lateral borders of medioter-

gite and the pleurotergite somewhat paler. Pleura pale brownish yellow, with a light gray bloom; dorsopleural membrane clear light yellow. Halteres elongate, stem yellow, knob dark brown, its extreme apex paler. Legs with the coxae and trochanters yellow, sparsely pruinose; femora and tibiae yellow, the tips not or but vaguely darkened; tarsi obscure yellow, passing into brown; claws (male) toothed. Wings with the ground subhyaline, patterned with dark brown, pale brown and whitish subhyaline; prearcular and costal fields clear yellow; the darkest areas include the stigma, anterior cord, *m-cu* and a seam along vein *Cu*, chiefly in *Cu*<sub>1</sub>, not involving cell *M*; paler brown washes beyond cord, including most of the cells, and a small spot at origin of *Rs*; whitish areas include the obliterative band at cord, extending from before the stigma to the posterior border along vein *M*<sub>4</sub>, widely expanded in cell 1st *M*<sub>2</sub>; post-stigmal whitening conspicuous, involving the basal half of cell *R*<sub>2</sub> but barely invading cell *R*<sub>3</sub>; outer ends of cells *R*<sub>5</sub> and *M*<sub>1</sub> faintly brightened; veins brown, yellow in the flavous areas. Venation: *Rs* about two and one-half times *m-cu*; *R*<sub>1</sub>+<sub>2</sub> strongly preserved; petiole of cell *M*<sub>1</sub> a little longer than *m*.

Basal abdominal tergites pale yellow, the more proximal segments with faint indications of a pale brown median stripe; basal sternites light yellow, the outer segments somewhat darker, light brown. Male hypopygium with the suture between the ninth tergite and ninth sternite complete; basistyle broadly suboval in outline, separated from the sternite by a pale ventral suture that is about one-third complete. Ninth tergite large, deeply notched medially, the lateral lobes produced into long, somewhat flattened arms, broad basally, the outer half more narrowed, the tip subacute; outer surface of lobes with coarse black setae, these much shorter and pale yellow at apices of the lobes and likewise becoming very small nearer the midline; at base of notch with a conspicuous compressed median tooth that is directed caudad and slightly dorsad. Ninth sternite with the appendage small but extensive, each further produced at its lower mesal angle into a smaller globular lobule, both lobes with conspicuous setae. Basistyle truncate at apex. Outer dististyle small, placed at base of the inner style; longest setae a little more than one-half the total length of the style. Inner dististyle with both the beak and subapical beak very heavily blackened; dorsal crest undeveloped; outer basal lobe attached to main body of style by a narrow basal union only, appearing as a broadly flattened yellow blade, narrowed at apex into a flattened obtuse beak; surface corrugated longitudinally and provided with abundant pale setae. Phallosome forming a common sclerotized base, with the gonapophyses appearing as divergent paddle-shaped blades near the apex, these arms much longer than the small capitate apical projection that includes the minute aedeagus. Eighth sternite only moderately sheathing, its base telescoped beneath the seventh sternite, its apex terminating about opposite one-fourth the length of the subcylindrical ninth sternite; apex of sternite shallowly notched, the median area with numerous long straight setae; outer portion of the very low oblique lobes with about four more powerful flattened bristles that bend inward, their tips decussate at midline.

*Habitat.* Washington.

*Holotype.* ♂, Lake Keechelus, near Snoqualmie Pass, Kittitas Co., June 29, 1924 (A. I. Melander); in Melander Collection. *Paratopotype.* 1 ♂.

This conspicuous fly is readily told from all other regional species of the subgenus *Lunaticipula* Edwards that have the tergal lobes of the male hypopygium produced into long horns by its patterned wings and by all details of structure of the male hypopygium. Other regional species having long tergal horns include *Tipula* (*Lunaticipula*) *armata* Doane, *T. (L.) megalabiata* Alexander, *T. (L.) sternata* Doane and *T. (L.) tergata* Doane. The most similar of these species is *armata*, but the resemblance is not close, and the two flies are only remotely allied.