

NEW NEARCTIC CRANE-FLIES (TIPULIDAE, DIPTERA), PART XX

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The preceding part under this general title was published in 1943 (Can. Ent., 75:139-145). In the present instalment I am describing new species of the genus *Tipula* received from various friends, as acknowledged throughout the text. The types of the novelties are preserved in my collection of these flies.

Tipula (*Bellardina*) *warneri* n. sp.

General coloration of mesonotum cream-yellow, the praescutum with four gray stripes that are narrowly bordered by black; antennal scape and pedicel yellow, succeeding segments weakly bicolored; knobs of halteres pale yellow; femora reddish yellow, the tips narrowly but conspicuously black; wings whitish, conspicuously marbled with brownish gray and dark brown, the latter areas very restricted; *Rs* long, nearly twice *m-cu*; vein *R*₃ nearly straight; cell 1st *M*₂ unusually small, pentagonal; *m-cu* on *M*₄ some distance beyond the base; male hypopygium with the caudal margin of the tergite very gently emarginate, with a small glabrous projection on either side of median area; ventral tergal lobes slender, with smooth margins; no rounded knob on ninth sternite at base of dististyles.

Male. Length about 26 mm.; wing 25 mm.; antenna about 4.6 mm.

Frontal prolongation of head buffy above, more reddish brown on sides; nasus short and stout; palpi brown, the terminal segment black. Antennae with scape and pedicel yellow; succeeding segments weakly bicolored, the small basal enlargement darker than the pedicel; intermediate and outer segments more uniform dark brown; verticils elongate. Head light gray, with a median brown vitta and similar lines behind each eye; vertical tubercle very low, simple.

Pronotum dark brown medially, paling to yellow on sides. Mesonotal praescutum with the ground cream-yellow, with four gray stripes, the intermediate pair a trifle more brownish gray; all stripes narrowly but very conspicuously bordered by black, the inner border of intermediate pair a common median vitta that is narrower than the lateral borders of the stripes; humeral and lateral portions of sclerite vaguely patterned with paler brown; central portion of suture conspicuously darkened; scutum cream-yellow, each lobe with two gray areas that are narrowly bordered by black; scutellum gray basally, brownish yellow apically, with a central black dash on basal portion; medio-tergite light gray on cephalic three-fifths, the posterior portion darker gray; a central dark line with circular, dark brown spots on either side of basal half; pleurotergite gray, the katapleurotergite light yellow. Pleura with dorsopleural region broadly pale yellow; remainder of pleura variegated with dark brown on a gray ground, the amount of dark color restricted, most evident as a dorsal area, with smaller scattered spots elsewhere. Halteres dark brown, base of stem restrictedly yellow, the knob broadly pale yellow. Legs with coxae light gray, the fore and hind pairs patterned with brown; trochanters reddish yellow, sparsely pruinose; femora reddish yellow, the tips rather narrowly but conspicuously black; tibiae obscure brownish yellow, the tips even more narrowly infuscated; tarsi light brown, passing into black; claws with tooth acute. Wings narrower than in *shastensis*; ground color whitish, conspicuously patterned with brownish gray and dark brown, the latter very restricted; prearcular and costal fields more yellowish; dark areas at arculus and origin of *Rs* very small and inconspicuous; stigmal area small, obscure brownish yellow, narrowly margined with darker; darkened seams at cord very restricted; cells beyond cord unusually darkened but conspicuously variegated with pale, including almost the distal half of cell *R*₅; paler brownish gray washes over the cells before cord, the spot beyond midlength of vein 1st *A* large and diffuse; ground areas in cells before cord small and scattered, relatively inconspicuous against the ground; veins dark

brown, more reddish brown in the brightened basal and costal portions. Venation: R_s long, nearly twice $m-cu$; vein R_3 nearly straight, not sinuous on distal third as in *shastensis*; cell M_1 long, its petiole one-half longer than m ; cell $1st\ M_2$ unusually small, pentagonal, the second and third sections of vein M_{1+2} subequal in length; $m-cu$ on M_4 some distance from base of latter, this section erect.

Abdomen with basal tergites gray, patterned with dark brown; basal sternites reddish yellow, with conspicuous light gray lateral borders that are very narrowly bordered internally with brown; outer segments more uniformly dark brown. Male hypopygium with the caudal margin of ninth tergite, when viewed from above, very gently emarginate; on either side of this emargination with a very small, glabrous, oval projection or flange; on ventral surface with two elongate flattened dusky blades or lobes, these more slender and elongate than in *shastensis*, their margins entirely smooth (microscopically corrugated in *shastensis*). Notch of ninth sternite moderately deep; no rounded knob on posterior margin, at base of dististyles, as in *shastensis*. Outer dististyle somewhat as in *shastensis*, an extensive semicylindrical pale roll, the rounded margins with relatively abundant and conspicuous black setae. Inner dististyle with beak more or less elevated, there being a shallow angle between it and the main body of style; sensory area oval in outline, composed of several pits.

Habitat. Idaho.

Holotype. ♂, Coeur d'Alene National Forest, altitude 4,800 feet, July 10, 1942 (C. L. Warner).

I am very pleased to name this species in honor of the collector, my former student, Mr. Charles Lloyd Warner, now with the armed forces. The most closely related species is undoubtedly *Tipula* (*Bellardina*) *shastensis* n. sp., of northern California. The general type of hypopygial structure is much the same in both flies while differing in details. The general appearance, venation and wing pattern of the present fly is quite distinct from *shastensis* and there seems to be no doubt as to the distinctness of the two flies.

***Tipula* (*Bellardina*) *shastensis* n. sp.**

Allied to *commiscibilis* and *warneri*; antennal scape yellow; mesonotal praescutum with four grayish brown stripes, the lateral pair almost entire; postnotum light gray, the mediotergite with five brown areas; pleura variegated with dark brown, yellow and gray; femora yellow, the tips narrowly and relatively inconspicuously dark brown; wings obscure yellow, patterned with brownish gray and more restricted dark brown areas; R_s about two-thirds longer than $m-cu$; cell M_1 deep, its petiole very short; abdomen reddish yellow, the basal tergites darker sublaterally; outer segments more uniform darker brown; male hypopygium with the outer dististyle unusually extensive, appearing as a more or less semicylindrical rolled plate, provided with relatively few setae, these latter arranged in four groups.

Male. Length about 26 mm. wing 23 mm.; antenna about 4.3 mm. Frontal prolongation of head above light gray, dark brown on sides and beneath; nasus distinct; palpi brownish black. Antennae with scape and pedicel yellow; basal flagellar segments light brown, the outer ones somewhat darker; verticils long and conspicuous; basal enlargements of segments relatively conspicuous. Head light gray; medial and postocular darkenings distinct; vertical tubercle low and entire.

Pronotum brown medially, the area narrowly bordered by darker; lateral border broadly pale yellow. Mesonotal praescutum with the restricted ground yellow, almost obliterated by four grayish brown stripes, the intermediate pair separated by a narrow brown median line that is darker at cephalic border; on either side of this median vitta with a linear grayish line at near midlength of sclerite; lateral stripes almost entire, bordered by darker only on their cephalic

portion; extreme border of humeral region dark brown, polished; lateral praescutal borders darkened; scutum with median area yellow, each lobe virtually covered by a large brownish gray area that is narrowly bordered by darker; scutellum chiefly dark brown, with a narrow darker spot at base; mediotergite light gray, patterned with brown, including a linear central mark, suboval basal areas on either side and paired circular spots at posterior border. Pleura variegated dark brown, yellow and gray; dorsopleural area broadly pale yellow; a more sericeous pollinose stripe across the ventral pleurites, the anepisternum chiefly dark brown, the ventral sternopleurite dark gray. Halteres brown, the knob dark brown, the base of stem restrictedly pale. Legs with the fore and hind coxae gray, their outer faces infuscated, middle coxae more whitened; trochanters obscure brownish yellow; femora yellow, the tips narrowly and somewhat inconspicuously dark brown; tibiae and tarsi fulvous-yellow, the outer tarsal segments brownish black; tooth of claw low and obtuse. Wings relatively broad; ground color very restrictedly obscure yellow; a conspicuous brownish gray and more restricted dark brown pattern; the darker areas include a relatively small spot in bases of cells *R* and *M*; a spot at origin of *Rs*; stigma and a confluent cloud over anterior cord; seams over posterior cord; extensive darkenings in outer radial cells; a spot at near two-thirds the length of vein 1st *A*; extensive darkenings along wing margin, most developed at end of vein 2nd *A*; the yellow color occurs especially as extensive areas before and beyond the stigma and anterior cord; outer third of cell *R*₅ behind vein *Cu* and near bases of cells *R* and *M*; a conspicuous spot near outer end of vein *Cu* in cell *M*; areas on either side of the dark spot over vein 1st *A*; conspicuous yellow marginal marks in Anal cells, including two in 1st *A*; veins dark brown, more yellowish in the prearcular and costal fields. Venation: *Rs* about two-thirds longer than *m-cu*, the latter at fork of *M*₃₊₄; cell *R*₃ constricted at midlength; cell *M*₁ deep, its petiole very short, only about one-fourth *m*, cell 1st *M*₂ relatively large, pointed at outer end.

Abdomen with basal tergite brown, the succeeding segments reddish yellow, darker brown sublaterally, the margins restrictedly buffy gray; sternites similarly reddish, the caudal borders restrictedly pale; outer segments and hypopygium darker brown. Male hypopygium with suture between tergite and sternite indicated on its outer two-thirds. Suture of basistyle scarcely evident, apparently about opposite the base of the sternal notch, the basistyle thus very narrow and restricted in extent. Median notch of ninth sternite quadrate; outer angles of sternite, near base of dististyle, produced into a small glabrous lobe; ventral portion of sternite with unusually long and abundant black setae, the median region glabrous. Ninth tergite, viewed from above, with the caudal margin appearing nearly truncate; viewed caudally and from side, the median region is depressed and bears two lobes, with two further larger compressed blades extending from the ventral surface. Pale lobes from beneath the tergite unusually large and conspicuous, oval in outline, their surface microscopically roughened. Outer dististyle of unusual extent, pale, appearing as a more or less semicylindrical rolled plate, the incurved margins more or less overlapping when in their normal position; apical portion of style a little produced, each outer angle of this area bearing more abundant blackened setae; the inner rolled portion likewise with two approximated groups of blackened setae. Inner dististyle much smaller in area than the outer style. Rostrum relatively short and elevated; area of sensory pores relatively extensive, including at least a score of pores.

Habitat. California (Shasta County).

Holotype ♂, Burney, May 30, 1939 (Mont Cazier).

The nearest ally of the present fly is *Tipula* (*Bellardina*) *warneri* n. sp. A comparison of the hypopygial details of the two flies will be found under the discussion of the latter species.

***Tipula (Bellardina) calaveras* n. sp.**

Allied to *commiscibilis*; male hypopygium with the tergite having a small V-shaped median notch; outer dististyle very large and flattened, dark colored, with unusually short but dense setae, its inner lobe a strong curved blade, the apex densely covered with abundant black setae; inner dististyle smaller than the outer, the rostrum elongate.

Male. Length about 25 mm.; wing 24.5 mm.; antenna about 4 mm. Frontal prolongation of head relatively long, dark brownish gray, darker reddish brown on sides and beneath; nasus distinct; palpi brownish black. Antennae moderately long; scape dark brown, its dorsal surface crenulate; pedicel light yellow; flagellum brown, the outer segments passing into darker brown; verticils long and conspicuous. Head light gray, with a broad conspicuous median brown stripe; posterior orbits a trifle darkened; vertical tubercle simple.

Pronotum dark brown, the sides light yellow. Mesonotal praescutum with the restricted ground light yellow; four stripes, the intermediate pair more buffy gray, narrowly bordered by dark brown; lateral stripes dark gray, similarly bordered by dark brown; additional dark brown lines and borders on the humeral and lateral portions of praescutum, the latter wider; scutum with median region golden yellow, each lobe with a brownish gray center, bordered internally and at the suture with dark brown, the latter more extensive; scutellum brownish gray, with a median brown line on basal half, this bordered by yellowish pollinose areas; mediotergite brownish gray with a very delicate median line that appears impressed, on either side of this at near midlength with a yellowish spot; lateral borders of mediotergite restrictedly grayish; pleurotergite chiefly dark brown, with a pale area on the katapleurotergite. Pleura conspicuously patterned with dark brown and creamy yellow, the latter including the dorsopleural membrane and a broad ventral stripe that widens out behind to involve the ventral pteropleurite, meron and metapleura. Halteres obscure yellow, the base of knob weakly infuscated. Legs with the coxae brown, variegated with light gray areas, very extensively so on mid-coxae; trochanters dark brownish gray; femora yellow, the tips rather broadly and conspicuously black, the amount subequal on all legs; tibiae and tarsi yellow, the outer tarsal segments passing into brownish black; claws (male) with tooth low and triangular. Wings marmorate, as in the subgenus; ground color chiefly cream-yellow, variegated with abundant gray and more restricted brown areas; the brown pattern includes marks in postarcular field; origin of R_s ; stigma and a confluent seam over anterior cord; outer end of cell R_2 , crossing cell R_3 into R_5 ; marginal seams at ends of longitudinal veins, most extensive at R_4+3 and 2nd A ; the gray clouds include the centers of most cells, in outer ends of cells R_5 and M_1 more nearly of the ground color; posterior cord more narrowly seamed with dark brown, the pattern extending to and along the posterior wing border at this point; a further deepening of the margin in outer end of cell 1st A ; cell Cu with three gray areas, the outer one elongate; veins brownish yellow, darker in the clouded portions. Venation: R_s unusually long, about twice R_2+3 or approximately one-half longer than $m-cu$; cell 1st M_2 small, about one-half as long as cell M_1 , the latter nearly three times its petiole.

First abdominal tergite brown, pruinose on sides; succeeding segments reddish, becoming darker brown on outer segments, including hypopygium. Male hypopygium with the ninth tergite separate from the ninth sternite except at cephalic end. Basistyle separated from sternite only by a short weak ventral suture. Ninth sternite with a deep median quadrate notch, the base of which is slightly protuberant. Ninth tergite a transverse plate, its caudal margin convex, with a small, broad, V-shaped, median notch; outer lateral tergal angles produced into small rounded glabrous lobes; dorsal surface of tergite with setae small and relatively sparse, chiefly grouped near

outer lateral portions. From beneath the tergite, on either side, extends a pale membranous lobe. Outer dististyle large and flattened, as in the group; chiefly dark-colored, with unusually short but abundant setae; outer lobe subtriangular, its dorsal edge heavily polished and blackened; inner lobe of style broad at base, bent at nearly a right angle and thence narrowed to the subacute tip; the entire narrowed apical portion clothed with numerous dense black setae to darken the whole area; from posterior basal portion of style juts a small slender lobe. Inner dististyle smaller than the outer; body subquadrate; beak long-produced, its apex flattened and more or less recurved; a group of six or seven sensory pits near the base of rostrum.

Habitat. California (Alameda County).

Holotype. ♂, Sunol, beneath a darkened bridge over Calaveras Creek, March 20, 1939 (T. H. G. Aitken).

Tipula (*Bellardina*) *calaveras* is quite distinct from the more than a dozen regional members of the subgenus, differing especially in the structure of the male hypopygium, particularly of the tergite and outer dististyle. The three species described at this time all have the basistyle virtually fused with the ninth sternite, being separated by a weak ventral suture only.

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

Belongs to the *californica* group, allied to *californica*; general coloration polished yellow, the praescutum with three more reddish stripes; head and thoracic pleura more pruinose; femora yellow, the tips very narrowly and weakly infuscated; wings whitish subhyaline, most cells with brownish gray centers; abdomen yellow, the tergites trivittate with darker, the median stripe brownish black; male hypopygium of moderate size; inner dististyle massive, the posterior portion produced into two separate lobes or rods; eighth sternite relatively small, each lateral angle produced into a small finger-like lobe that is sparsely fringed with moderately long setae.

Male. Length about 16 mm.; wing 14.5 mm.; antenna about 4.8 mm. Frontal prolongation of head elongate, exceeding the remainder of head, shiny yellow; nasus brown, tufted with yellow setae; palpi brownish black. Antennae with scape and pedicel yellow; flagellum black, the proximal half of basal segment paler; flagellar segments only moderately incised; longest verticils of more proximal segments exceeding the segments in length. Head conspicuously gray pruinose, paler surrounding the antennal bases; a more or less distinct dark median vitta.

Pronotum obscure yellow, more reddish medially. Mesonotal praescutum yellow, with three more reddish stripes, the lateral pair straight; notch of suture conspicuously darkened; scutum yellow, each lobe variegated with reddish; scutellum brown; mediotergite brown, pruinose on cephalic third. Pleura pale, sparsely pruinose, the more posterior sclerites and the pleurotergite clearer yellow; dorsopleural membrane yellow. Halteres brown, the base of stem and extreme base of knob paler. Legs with coxae yellow, sparsely pruinose; trochanters yellow; femora yellow, the tips very narrowly and weakly infuscated; tibiae pale yellowish brown; basitarsi yellowish brown, passing into black; remaining segments black; claws toothed. Wings whitish subhyaline; virtually all cells with darker brownish gray centers, restricting the ground to the vicinity of the veins; stigma dark brown, its proximal end more yellow; areas immediately before and beyond the stigma more evidently whitened than remainder of ground; veins brown, more yellowish brown in the prearcular field. Squama with strong setae. Venation: *Rs* long, about three times *m-cu*; M_3+4 shorter than basal section of M_1+2 .

Abdomen yellow, the tergites trivittate with darker; the brownish black median stripe interrupted by narrow yellow posterior borders to the segments; lateral borders paler, more grayish; sternites reddish yellow, with narrow yellow

posterior borders; hypopygium relatively large, chiefly brownish yellow, the ninth segment dark liver-brown, the eighth sternite more pruinose. Male hypopygium with the ninth segment elongate, conspicuous. Tergite entirely separate from the sternite; basistyle complete, not produced; accessory sclerite of ninth sternite conspicuous. Eighth sternite only moderately sheathing, narrowed outwardly, each lateral angle produced into a small finger-like lobe that is sparsely fringed with moderately long setae. Ninth tergite completely divided down midline by membrane, the lateral lobes blackened, near outer ends produced into a plate that terminates in paired blackened teeth or points. Inner dististyle unusually massive, the beak terminating in an acute blackened point, the posterior portion produced into two separate lobes or rods, in addition to the long setiferous blade common to the group. Gonapophyses united basally, thence separate as slender rods, each bearing several strong setae at apex.

Habitat. California (Santa Clara County).

Holotype. ♂, Mount Hamilton, altitude 3,000 feet, May 19, 1940 (T. H. G. Aitken).

I am pleased to dedicate this species to Lieutenant Thomas Henry Gardiner Aitken, to whom I am particularly indebted for many specimens of Tipulidae from California. The fly is very different from the two other previously described species of the group, *Tipula* (*Lunatipula*) *californica* (Doane, 1908) and *T. (L.) sweetae* Alexander, 1930, differing in all details of structure of the male hypopygium. The reddish praescutal stripes give to this fly an appearance that is very different from that of the other species but this may prove to be a variable character.