

**NEW OR INSUFFICIENTLY-KNOWN CRANE-FLIES
FROM THE NEARCTIC REGION (DIPTERA,
TIPULIDAE). PART X.¹**

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The preceding part under this title was published in 1949 (Bull. Brooklyn Ent. Soc., 44: 15-20). At this time I am describing a series of species that were taken in Arizona by Mr. Floyd Werner, to whom I am indebted for materials from the Philippines, Mexico and the southwestern United States. The types of the species are preserved in my personal collection.

***Nephrotoma navajo* n. sp.**

Mesonotal praescutum yellow, with three black stripes, the lateral pair slightly outcurved; mediotergite chiefly black; antennae black, the scape a trifle paler; occipital brand elongate diamond-shaped; wings with a weak brownish tinge, the stigma pale brown; abdomen yellow, the tergites trivittate with brown, the median stripe nearly continuous; male hypopygium with the lateral tergal lobes broadly rounded; inner dististyle with beak compressed, dorsal crest low, elongate, lower beak terminating in a strong blackened spine; eighth sternite with caudal margin subtruncate, with sparse setae on the sublateral portions.

Male.—Length about 9.5-11.5 mm.; wing 10-11 mm.; antenna about 3-3.5 mm.

Frontal prolongation of head yellow, darkened above, including nasus, in cases only the outer end of prolongation darkened; palpi brownish black. Antennae black, the scape a trifle paler; flagellar segments moderately incised. Head light yellow on front and beneath, deep orange on vertex; a small brown spot on either side of vertical tubercle adjoining the eye; occipital brand elongate diamond shaped, sharp-pointed in front, in cases reaching the weak notch of the vertical tubercle.

Pronotum light yellow medially, infuscated on sides. Mesonotum polished yellow, the praescutum with three black stripes, the anterior ends of the lateral pair slightly outcurved, ending in a vague more opaque spot; lateral end of suture and a linear mark cephalad of this on the praescutal margin opaque black; scutum yellow, each lobe with two confluent polished black areas; scutellum testaceous

¹Contribution from the Department of Entomology, University of Massachusetts.

yellow, with an ill-defined central darkening; mediotergite chiefly black, the broad lateral margins light yellow except behind. Pleura light yellow variegated with dark reddish brown areas on the ventral sternopleurite, anepisterum, meron and pleurotergite, and again on the posterior margin of the mesepisternum. Halteres dark brown, the stem obscure yellow at base. Legs with the fore coxae darkened on basal half, the middle pair on extreme base only, the remainder of coxae weakly pruinose; trochanters yellow; femora obscure yellow, the tips narrowly but conspicuously blackened; tibiae brownish yellow, the tips more extensively blackened; tarsi black; claws (male) toothed. Wings with a weak brownish tinge, the prearcular and costal fields more yellowish brown; stigma pale brown; veins brownish black, those of the costal field paler. Venation: Cell M^1 narrowly sessile; $m-cu$ a distance before fork of M about equal to vein M_{1+2+3} or less.

Abdomen yellow, the tergites trivittate with brown, the median stripe nearly continuous, narrowly broken at the posterior margin of segment, lateral stripes broken into spots; sternites and hypopygium yellow. Caudal margin of ninth tergite of male hypopygium with a deep and narrow notch, the lateral lobes broadly rounded, the blackened spines relatively sparse and chiefly marginal; a small outer lobule that bears six or more similar spines. Outer dististyle of moderate length, narrowed gradually to the subacute tip. Inner dististyle with the beak compressed, darkened; dorsal crest low but elongate, glabrous; lower beak terminating in a strong blackened spine; posterior crest with a small reddish brown spine. Eighth sternite extensive, the caudal margin subtruncate or with the membranous median portion a trifle more produced; sublateral setae yellow, relatively sparse, forming weak brushes.

Habitat: Arizona (Apache County).

Holotype: ♂, McNary, White Mountains, altitude 7400 feet, July 22, 1948 (Werner). Paratopotypes, 4 ♂♂.

This fly most resembles species such as *Nephrotoma excelsior* (Bergroth), of mountainous British Columbia; *N. snowi* (Doane), of the Rocky Mountains; and *N. vittula* (Loew), of subarctic North America. It differs from all in the details of coloration, including the body, antennae, and wings, and in the hypopygial characters of those species where the male sex is known. The hypopygium of *excelsior* has not been described.

***Nephrotoma perincisa* n. sp.**

Mesonotum polished light yellow, the praescutum with three

reddish brown stripes that are more or less bordered by blackish; lateral praescutal stripes black, without an opaque spot at anterior end; antennal scape yellow, most of the flagellum black; occipital brand relatively broad, diamond-shaped, pointed at both ends; wings subhyaline to weakly tinted; stigma medium brown; male hypopygium with the caudal margin of tergite deeply incised, lateral lobes triangular, pointed at tips, with blackened spicules; inner dististyle without spinous points on disk or posterior border; each gonapophysis produced into two slender spines; apex of eighth sternite unequally trilobed, the median lobe long and slender, with sparse setae.

Male.—Length about 11–12 mm.; wing 12–13 mm.; antenna about 4.3–4.5 mm.

Frontal prolongation of head yellow, more reddened above; nasus elongate; palpi yellow. Antennae with scape yellow; pedicel and base of first flagellar segment light brown, the remainder of organ black; flagellar segments moderately incised, longer than the verticils. Front light yellow, remainder of head orange; occipital brand diamond-shaped, relatively broad, pointed at both ends; vertical tubercle entire, rounded.

Pronotum light yellow above, more reddened on sides. Mesonotum polished light yellow, the praescutum with three reddish brown stripes that are more or less bordered by blackish, in the type much paler than in the paratypes; lateral praescutal stripes straight, without an opaque spot at anterior end; scutum yellow, each lobe patterned with reddish areas that are margined with black, the mark continued laterad along the suture and for a short distance caudad along the outer margin of lobe; median area of scutum with a narrow dark line; scutellum dark reddish brown, parascutella somewhat paler, in cases yellow; mediotergite with its central portion reddish brown, the lateral borders broadly yellow; pleurotergite reddish, the swollen portion more yellowed. Pleura yellow, variegated on ventral sternopleurite and anepisternum with pale reddish areas, the mesepimeron and meron uniformly pale. Halteres with stem obscure yellow, knob infuscated. Legs with the coxae whitish pruinose; trochanters yellow; remainder of legs brownish yellow, the tarsi blackened; claws (male) toothed. Wings subhyaline to weakly tinted, cell *Sc* brownish yellow; stigma medium brown; veins brown. Sparse macrotrichia in centers of outer parts of cells *R*₃ and *R*₅; stigmal trichia numerous. Venation: *Sc*₂ ending a short distance beyond the origin of *R*₃; cell *M*₁ short-petiolate; *m-cu* on *M* a short distance before the fork.

Abdomen chiefly yellow; tergites with a broken brown central stripe, interrupted at the incisures, including the basal ring of the segment, on the outer segments a little more expanded; tergites eight and nine, and all sternites, yellow. Male hypopygium with the caudal margin of the ninth tergite deeply incised, the lateral lobes triangular, pointed at tips, provided with blackened spicules. Outer dististyle long-oval, less than four times as long as broad, the tips narrowly obtuse. Inner dististyle with the beak narrow, its tips obtuse, slightly decurved; dorsal crest low in front, becoming more elevated behind, the posterior end truncated; lower beak slender, blackened, slightly upcurved at tip; no spinous points on disk or posterior part of style. Gonapophysis produced into two slender spines. Eighth sternite extensive, narrowed outwardly, the apex unequally trilobed, the median lobe long and slender, with sparse setae, the lateral lobes low and broad, with dense but relatively short incurved setae.

Habitat: Arizona.

Holotype: ♂, McNary, Apache County, White Mountains, altitude 7400 feet, July 22, 1948 (Werner). Paratopotype: 1 ♂; paratype: 1 ♂, west slope of Graham Mountains, Graham County, altitude 9000 feet, August 5, 1948 (Werner).

The present fly is superficially most like *Nephrotoma ferruginea* (Fabricius) and *N. occidentalis* (Doane), differing from all regional species in the structure of the male hypopygium.

***Limonia (Dicranomyia) geronimo* n. sp.**

Belongs to the *tristis (liberta)* group; general coloration gray, the praescutum with a single conspicuous brown stripe; male hypopygium with the tergite broadly truncated across apex, the median area with a group of seven or eight long setae; ventral dististyle relatively small, its total area about one-half greater than that of the basistyle; rostral prolongation with the tubercles of the spines small, the largest about one-half the length of the spine, the second tubercle at its base, very small.

Male.—Length about 7.5 m.; wing 8 mm.

Rostrum and palpi black. Antennae black throughout; scape more pruinose; flagellar segments oval; verticils relatively short and inconspicuous. Head light gray; anterior vertex narrow, approximately one-half the diameter of the scape.

Pronotum dark brownish gray. Mesonotal praescutum gray, with a single conspicuous brown stripe, the lateral stripes not or barely indicated; posterior sclerites of notum and the pleura gray;

dorsopleural membrane restrictedly obscure yellow. Halteres with stem yellow, knob infuscated. Legs with the coxae brownish black, pruinose; trochanters obscure brownish yellow; remainder of legs black, the femoral bases restrictedly yellow. Wings relatively narrow, whitish subhyaline; stigma short-oval, pale brown, inconspicuous; veins dark brown, somewhat paler in the prearcular field. Venation: Sc_1 ending opposite the origin of Rs , Sc_2 close to its tip; Rs weakly angulated and spurred near origin; inner end of cell R_3 lying far before the other elements of cord; $m-cu$ about one-half its length before the fork of M .

Abdominal tergites dark brown, sparsely pruinose, basal sternites somewhat paler; male hypopygium darkened, the ventral dististyle chiefly pale. Male hypopygium of the general type of *liberta*. Ninth tergite broadly truncated across apex, the median area with a group of seven or eight long yellow setae. Basistyle with the tubercles about as in *liberta*; ventromesal lobe with a large area of strong setae at and near tip. Dorsal dististyle only slightly curved, the tip abruptly narrowed into a sharp spine. Ventral dististyle relatively small, its total area about one-half greater than that of the basistyle; rostral prolongation with the tubercles of the spines small, the largest about one-half the length of the spine, the second tubercle at its base, very small. Gonapophysis with the lower edge of the lobe microscopically and irregularly serrulate or roughened.

Habitat: Arizona (Cochise County).

Holotype: ♂, West slope of the Chiricahua Mountains, altitude 5640 feet, August 3, 1948 (Werner).

Closely related to *Limonia* (*Dicranomyia*) *liberta* (Osten Sacken), of eastern North America, differing especially in the structure of the male hypopygium.

Atarba (Atarba) apache n. sp.

Thoracic dorsum fulvous yellow, the posterior sclerites vaguely pruinose; antennae with scape yellow, the flagellum uniformly black; femora obscure yellow basally, the tips broadly and gradually infuscated; wings brownish yellow; Sc_1 ending about opposite one-fourth the length of Rs .

Female.—Length about 7 mm.; wing 7.5 mm.

Rostrum obscure yellow; palpi black. Antennae with scape yellow, pedicel brownish testaceous, flagellum uniformly black; flagellar segments long-oval to subcylindrical. Head dark gray, somewhat more reddened posteriorly.

Thoracic dorsum chiefly fulvous yellow, the central part of the scutum and mediotergite vaguely to sparsely pruinose. Pleura obscure yellow, sparsely pruinose. Halteres weakly infuscated, the base of stem narrowly more yellowed. Legs with the coxae and trochanters yellow; femora obscure yellow basally, the tips broadly and gradually infuscated, more extensive on the fore legs where about the outer three-fourths is darkened; tibiae brownish yellow, the tips darker brown; tarsi brownish black. Wings brownish black, the prearcular field more yellowed; cells *C* and *Sc*₁ with the stigma, weakly infuscated; veins *R*₅ and *Cu* brownish yellow, the other veins pale brown, darker in the costal field. Venation: *Sc*₁ ending about opposite one-fourth the length of *R*₅, *Sc*₂ some distance from its tip, placed a short distance before origin of *R*₅; *R*₅ weakly angulated at origin, about one-third longer than the basal section of *R*₅; branches of *R*₅ subparallel on basal half, thence diverging, particularly *R*₅, cell *R*₄ at margin about one-third or more longer than cell *R*₂; *m-cu* close to fork of *M*.

Abdomen dark brown, only the genital segment and bases of ovipositor yellow; cerci elongate, horn-colored.

Habitat: Arizona.

Holotype: ♀, McNary, Apache County, White Mountains, altitude 7400 feet, July 22, 1948 (Werner).

This very distinct fly is most nearly allied to certain Mexican species, including *Atarba* (*Atarba*) *mexicana* Alexander, differing in all details of coloration and venation. It is entirely distinct from the only other regional species, *A. (A.) weneri* n. sp.

***Atarba (Atarba) weneri* n. sp.**

Thoracic dorsum reddish yellow, unpatterned; antennae with scape and pedicel black; legs obscure yellow; wings pale yellow, the stigma not or scarcely indicated; abdomen obscure yellow.

Female.—Length about 6.5 m.; wing 6.6–6.7 mm.

Rostrum brown, pruinose on the sides; palpi darker brown. Antennae with scape and pedicel black, more or less pruinose; flagellum broken. Head gray pruinose.

Thoracic dorsum reddish yellow, unpatterned, the pleura somewhat clearer yellow. Halteres with stem yellow, knob weakly infuscated. Legs with the coxae and trochanters pale yellow; remainder of legs obscure yellow, the outer tarsal segments infuscated. Wings pale yellow, the stigma not or scarcely darkened; veins yellow. Venation: *Sc*₁ ending just beyond origin of *R*₅, *Sc*₂ a slightly greater distance before this origin; *R*₅ pale, without trichia, sub-

equal in length to the basal section of R_5 ; upper branch of R_5 nearly straight, cell R_4 gently widened outwardly, approximately twice as wide at margin as cell R_2 ; $m-cu$ at fork of M .

Abdomen obscure yellow, the cerci darker.

Habitat: Arizona.

Holotype: ♀, Oak Creek Canyon, Coconino County, August 13, 1948 (Werner). *Paratopotype*: ♀.

I take very great pleasure in naming this distinct fly for Mr. Floyd Werner. The species is quite different from the three others now known from the United States and likewise from all regional Mexican species. The blackened basal segments of the antennae would seem to indicate that the flagellum would be similarly colored and not bicolored as in *Atarba* (*Atarba*) *picticornis* Osten Sacken and many other related forms.