

**UNDESCRIBED SPECIES OF JAPANESE TIPULIDAE  
(DIPTERA). PART IV**

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The preceding paper under this general title was published in the Transactions of the Shikoku Entomological Society, Vol. 10, Nos. 3-4, November 1970. The species discussed at this time were included in extensive series of crane flies that were presented to me by Dr. Kintaro Baba, collected by himself and by Messrs. H. Koike and Y. Maruyama, in various stations in Echigo, Honshu. One further species from Kyushu was taken by my long time friends, Syûti Issiki and Syusiro Ito. I am deeply indebted to all of the above for their co-operation in making known the rich and varied crane fly fauna of Japan.

*Tipula (Emodotipula) tenuiloba* sp. nov.

Belongs to the *naviculifer* group; characters much as in *naviculifer*, differing especially in the male hypopygium, especially the tergite and inner dististyle.

♂.- Length about 19 mm; wing 21 mm; antenna about 4.4 mm.

Frontal prolongation of head subequal in length to the remainder, dark brownish gray; nasus distinct; palpi brownish black. Antennae with scape and pedicel yellow, flagellum black, the extreme proximal ends of basal segments yellowed; basal enlargements small, verticils slightly longer than the segments. Head light gray, front and anterior vertex very pale yellow, the latter with a small rounded lobule immediately behind each antennal fossa.

Pronotal scutum gray, scutellum yellowed. Mesonotal praescutum light brown with four darker gray stripes; scutum similarly gray, each lobe with two separate darker gray areas; scutellum gray with a capillary dark brown vitta, parascutella nacreous yellow; mediotergite and part of pleurotergite gray, dorsal half of the katapleurotergite elevated, pale yellow. Pleura light gray, very slightly darker gray on ventral anepisternum, sternopleurite and meron. Halteres yellow, basal half of knob light brown. Legs with coxae gray, the extreme tips yellowed; trochanters yellow; femora yellow basally, gradually darkened outwardly, tips dark brown to brownish black; tibiae and tarsi brownish black. Wings (Fig. 3) with the ground whitened, prearcular field and cell *C* pale yellow, cell *Sc* deeper yellow; stigma brown, the proximal end more yellowed; a restricted brown pattern that includes the anterior cord and *m-cu*, with extensions over vein *Cu*; wing apex in outer radial cells broadly darkened; more restricted to scarcely evident darkened seams at origin of *Rs* and over most of vein *2nd A*; veins dark brown, yellowed in the brightened fields. Macrotrichia on *R*<sub>2+3</sub>, *R*<sub>4+5</sub> and more sparsely on base of *R*<sub>3</sub>.

1) Contribution from the Entomological Laboratory, University of Massachusetts.

Venation:  $R_s$  long, nearly equal to  $R_{4+5}$ ; petiole of cell  $M_1$  and  $m$  subequal.

Basal abdominal tergites orange yellow, heavily patterned with gray, sternites more uniformly brown; outer segments bark brown, outer parts of hypopygium, especially the sternum, paler. Male hypopygium (Fig. 4) much as in *naviculifer*, differing especially in the very slender lobes of the ninth tergite,  $t$ . Dististyles,  $d$ , as figured. Appendage of eighth sternite,  $8s$ , shown diagrammatically because of condition of the holotype; the actual breadth across base is more extensive than shown and the central darkening is elongate, shaped like a spear-head.

Holotype ♂, Mount Amakazari, Echigo, Honshu, June 3, 1955 (Baba), Baba No. AM 20.

As presently recognized, the *naviculifer* group of the subgenus *Emodotipula* Alexander includes five species, all from Japan and eastern Siberia. *Tipula* (*Emodotipula*) *holoteles* Alexander (Fig. 5D) is quite distinct from the other species which include, in addition to *T. (E.) naviculifer* Alexander (Fig. 5A), also *T. (E.) breviscapa* Alexander (Fig. 5B), *T. (E.) shogun* Alexander (Fig. 5C), and the present fly (Fig. 4). All are most readily distinguished by hypopygial characters, particularly the ninth tergite and the dististyles. The present fly has the tergal lobes,  $t$ , longer and more slender than in either *breviscapa* or *naviculifer*, where they are subequal in length and breadth, being lowest in *breviscapa*. The figures provided are based on holotype specimens with the exception of *shogun*, where the type is a female specimen. The specimen illustrated is from Kurashir, environs of Tretjakovo, U. S. S. R., collected by Savchenko and appears to be correctly determined by my comparison with the type specimen. A male specimen Kunimidake, Kyushu, 1200–1500 meters, collected May 24, 1952, by Ito and Issiki, is very similar to the type of *tenuiloba* but the tergal lobes are somewhat longer and broader and there are slight differences in the outline of the outer dististyle. Until more materials became available I would consider this specimen to pertain to the present species.

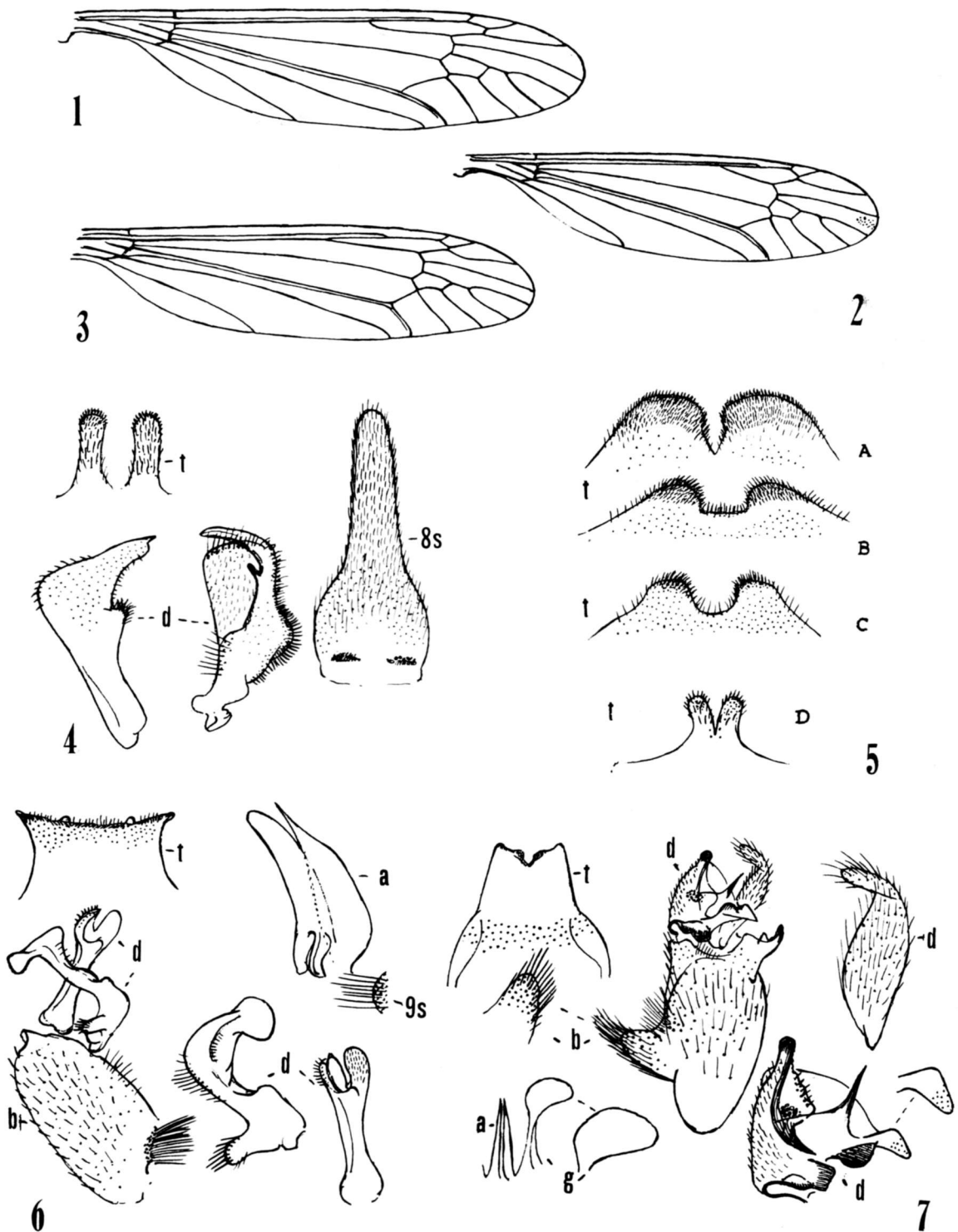
Savchenko (Fauna S. S. S. R., No. 89, Diptera II, No. 4: 256–265; 1964) had placed these species in the *saginata* group of the subgenus *Lunatipula* Edwards. Alexander (Philippine Jour. Sci., 94: 244–245; 1965) likewise referred these species to *Lunatipula* but it now seems preferable to place them in *Emodotipula* Alexander, as there defined.

### *Tipula* (*Sinotipula*) *babai* sp. nov.

Size large (wing of male about 20 mm); general coloration of head and thorax gray, praescutum with three darker gray stripes; halteres yellow; femora yellow with brown apices, most extensive on fore pair; wings pale yellow, prearcular and costal fields deeper yellow; an extensive light brown pattern that includes the broad apex; abdomen with proximal segments yellowed, outer ones gray with yellow borders; male hypopygium with posterior border of tergite nearly truncate, lateral angles produced; outer dististyle bilobed, inner style longer, its apex very obtuse; aedeagus stout.

♂.— Length about 18–20 mm; wing 20–21.5 mm; antenna about 6–6.5 mm.

♀.— Length about 26 mm; wing 22.5 mm.



Figs. 1-7. 1-3, venation; 4-7, male hypopygium. 1 and 6, *Tipula (Sinotipula) babai* sp. nov.; 2 and 7, *Tipula (Yamatotipula) bitumidosa* sp. nov.; 3 and 4, *Tipula (Emodotipula) tenuiloba* sp. nov.; 5A, *Tipula (Emodotipula) naviculifer* Alexander; 5B, *Tipula (Emodotipula) breviscapa* Alexander; 5C, *Tipula (Emodotipula) shogun* Alexander; 5D, *Tipula (Emodotipula) holoteles* Alexander. a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; s, eighth sternite; t, ninth tergite.

Frontal prolongation of head subequal to the remainder, without nasus, chestnut brown on sides, gray above; palpi with proximal two segments brown, remainder black. Antennae with scape, pedicel and base of first flagellar segment yellow, remainder black; flagellar segments strongly incised, the basal enlargements a little shorter than the remainder; verticils long and conspicuous, the longest subequal to the segment. Head light gray, anterior vertex and sides of front light yellow; no developed vertical tubercle.

Pronotal scutum gray, scutellum yellow. Mesonotal praescutum light gray with three darker gray stripes, the broader central stripe with a capillary central line on anterior half; scutum gray, each lobe with two contiguous darker areas; scutellum gray, vaguely more infuscated posteriorly; postnotum gray, katapleurotergite more whitened. Pleura gray; dorsopleural membrane light yellow. Halteres yellow. Legs with coxae gray, paler posteriorly; trochanters yellow; fore femora yellow, outer third brown, middle femora yellow with about the outer fourth darkened, posterior femora with tips narrowly brown, remainder of legs black; claws of male with a small tooth before midlength. Wings (Fig. 1) with the ground pale yellow, prearcular and costal fields deeper yellow; stigma bark brown; an extensive light brown pattern that includes the broad wing apex, seams over posterior cord and less evidently in outer ends of the anal and cubital cells; the yellow ground includes especially the basal fourth of wing and a broad band beyond cord in radial field, paler in cell *1st M*<sub>2</sub> and adjoining areas; small yellow spots at ends of the medial and more posterior cells, larger in the anal field, in some specimens these marginal brightened marks small or lacking; veins brown. Veins beyond cord chiefly with trichia, lacking on *Rs*; holotype with a few stigmal trichia. Venation: *Rs* relatively long, more than twice *R*<sub>2+3</sub>; *m-cu* long, oblique.

Abdomen with proximal four segments yellowed, the first slightly darker; outer segments gray, lateral borders broadly yellowed, posterior margins of both tergites and sternites yellow; hypopygium brown. Ovipositor with cerci straight, slender, hypovalvae broader, tips rounded. Male hypopygium (Fig. 6) with tergite, *t*, transverse, very slightly wider at base, posterior border nearly truncate, the lateral angles more produced; border narrowly blackened, fringed with delicate setae. Setal brushes of ninth sternite, *9s*, conspicuous. Dististyles, *d*, with outer style bilobed, inner lobe larger, oval; inner style larger, angularly bent at near two-thirds the length, apex very obtuse, basal lobe with sparse coarse setae. Aedeagus, *a*, very stout, one element at apex extended into an acute spine. Eighth sternite unarmed, widest posteriorly, outer margin subtruncate to very slightly convex.

Holotype ♂, Mount Amakazari, Echigo, Honshu, 900 meters, June 25, 1955 (Baba); Baba No. AM 1. Allotopotype ♀, pinned with type. Paratopotypes, ♂, 500 meters, June 3, 1955, Baba AM 20; ♂, 1000 meters, June 25, 1955, Baba AM 1.

The species is dedicated to Dr. Kintaro Baba, to whom we owe much of our present knowledge of the crane flies of Honshu. The most similar regional species is *Tipula (Sinotipula) tsiocenica* Alexander, of northern Korea, well distinguished from the present fly by the coloration of the legs and wings and especially in hypopygial structure.

*Tipula (Yamatotipula) bitumidosa* sp. nov.

Belongs to the *sempiterna (iroquois)* group; general coloration of head and thorax light gray, mesonotal praescutum and scutum with a slightly darker pattern that is narrowly bordered by pale brown; frontal prolongation of head elongate, without a nasus; halteres light yellow; wings brownish yellow, prearcular and costal fields clear light yellow, including the veins, a restricted darkened pattern that includes especially the stigma and broad wing apex; a small group of macrotrichia in outer end of cell  $R_5$ ; male hypopygium with apex of tergite flattened, shallowly notched; each basistyle on ventral face with a conspicuous lobe, outer dististyle long and narrow.

♂.- Length about 14 mm; wing 14.5 mm; antenna about 5 mm.

Frontal prolongation of head light gray, darker on sides, elongate, subequal to the remainder, without nasus; palpi brownish black. Antennae relatively long, pedicel obscure yellow, remainder dark brown; flagellar segments exceeding their verticils, basal enlargements small, terminal segment very reduced. Head clear light gray; vertical tubercle very small, anterior vertex broad, about six times the diameter of scape.

Pronotal scutum light gray, scutellum and pretergites buffy yellow. Mesonotal praescutum light gray with slightly darker gray stripes that are narrowly bordered by light brown; scutum gray, each lobe with two confluent darker gray areas, with a continuous light brown border; posterior sclerites of notum light gray, parascutella more buffy, mediotergites with vague indications of a capillary darker central vitta, with scattered long pale setae. Pleura clear light gray, including the katapleurotergite; dorsopleural membrane buffy yellow. Halteres light yellow. Legs with coxae light gray, trochanters yellow; femora yellow, clearest basally, outer ends darkened, slightly more extensive on fore legs where about the distal half is included; tibiae dark brown; tarsi brownish black, claws small, with a short sub-basal point. Wings (Fig. 2) brownish yellow, prearcular and costal fields clear light yellow, including the veins; stigma oval, brown, wing tip extensively darkened, involving about the outer half of the radial cells, much narrower in the medial field; a narrow but conspicuous darkening on anterior cord; outer two-thirds of vein  $Cu$  and the narrow cell  $Cu_1$  behind vaguely darkened. Longitudinal veins beyond general level of origin of  $Rs$  with trichia, including also the outer half of vein  $2nd A$ , lacking on  $1st A$ ; a group of about 20 trichia in outer end of cell  $R_5$  (position shown in figure by stippling). Venation: Cell  $M_1$  about twice its petiole;  $m-cu$  long, on vein  $M_4$  beyond the short transverse base.

Basal abdominal segments brownish yellow, the third and succeeding tergites brownish black, their posterior borders narrowly paler, lateral margins more broadly so, sternites chiefly more yellowed. Male hypopygium (Fig. 7) with tergite,  $t$ , long, gradually narrowed outwardly, terminating in a more yellowed plate without spinous points, apex shallowly notched to form two short lobes, the apices obliquely truncated and slightly produced. Each basistyle,  $b$ , on ventral face with a conspicuous lobe that is tufted with long black setae, apex of inner margin with a small bilobed projection. Outer dististyle,  $d$ , long and narrow, yellowed; inner style as

figured, beak small, with a more darkened rounded basal lobe; body of style with a slender spine and a stouter outer lobe, the blackened apex obtuse. Phallosome, *p*, with gonapophysis, *g*, pale, apices broadly expanded, subequal to or longer than the stem. Eighth sternite narrowly transverse, posterior border nearly truncate; surface of outer half with abundant small pale setae, the lateral ones smaller, without tufts or other setal concentrations.

Holotype ♂, Kitakanbara, Sugatani, Echigo, Honshu, May 8, 1955 (H. Koike); Baba No. 467.

The *sempiterna* group in the genus *Tipula* was proposed by Savchenko in 1961 (Fauna S. S. S. R., No. 79, Diptera II, No. 3: 263-268, figs. 153-156) to include five species of the subgenus *Yamatotipula* from Korea and Japan. Mannheims (Notulae Entomologicae, 43: 69-71, fig; 1963) later added a new species of the group from Finland as *fendleri* Mannheims. It may be noted that members of this group likewise occur in eastern North America and the term *iroquois* group had earlier been proposed by the writer (Amer. Midl. Nat., 24: 611; 1940). There are four such species presently made known, occurring chiefly in the southern Appalachian mountains of Tennessee and North Carolina. In 1942 (Diptera of Connecticut, Diptera, First Fascicle, pp. 264-281) I had applied similar paired specific names for the various groups in the genus *Tipula* where both Nearctic and Palaearctic representatives occurred, as in the present case. In this instance I am designating these as being in the *sempiterna* (*iroquois*) group. The members of the group are generally similar in coloration, including the darkened wing apex. In the present fly the long frontal prolongation of the head, without a nasus, differs from the condition found in *sempiterna* Alexander but is identical with *misakana* Alexander and *tsurugiana* Alexander in eastern Asia, as well as in the Nearctic *iroquois* Alexander. In *sempiterna* the prolongation is shorter and is provided with a distinct nasus.

***Tipula* (*Yamatotipula*) *koikei* sp. nov.**

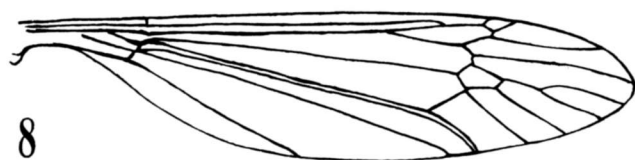
Belongs to the *sempiterna* (*iroquois*) group; nasus distinct; thorax chiefly gray, conspicuously variegated by light yellow; knob of halteres yellow; legs black, femoral bases yellowed; wings brownish yellow, prearcular and costal fields conspicuously light yellow, wing apex infuscated, remainder of disk with restricted darkenings; abdominal tergites black, lateral borders broadly yellow, outer segments darkened; male hypopygium with tergite produced into two relatively small lobes provided with numerous small spinoid setae; gonapophysis a very large flattened dark-colored blade, longer than the small straight aedeagus.

♂.- Length about 16 mm; wing 17.5; antenna about 5 mm.

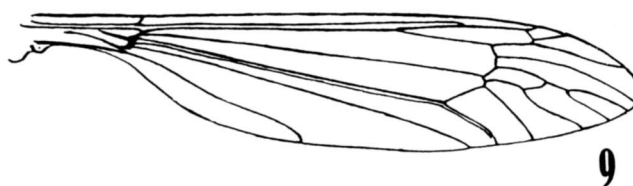
Frontal prolongation of head dark gray, nasus elongate; palpi black. Antennae black, pedicel obscure brownish yellow; flagellar segments moderately incised, slightly exceeding their longest verticils; terminal segment about two-thirds the penultimate, narrowed gradually to the tip. Head clear light gray; posterior vertex with abundant small black setae; vertical tubercle very low and obtuse.

Pronotal scutum broadly brownish yellow medially, sublaterally with large blackened areas; scutellum and pretergites clear light yellow. Mesonotal praescutum

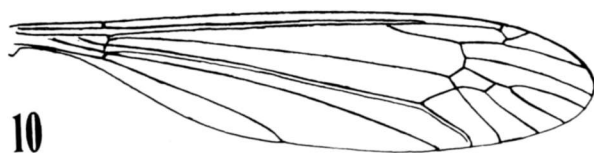
clear light yellow on sides, disk with three light gray stripes, the blackened interspaces very narrow, not reaching the suture behind; scutum medially very light gray, each lobe with two confluent light gray areas that are narrowly bordered by blackish near the suture; scutellum gray basally, broadly yellow behind, parascutella yellowed; mediotergite with anterior two-thirds yellow, vaguely patterned with clearer yellow, posterior border with two confluent light gray areas, pleurotergite yellow, the katapleurotergite lighter yellow, narrowly darkened below. Pleura chiefly light gray, bases of meron and metapleura more yellowed; dorsopleural



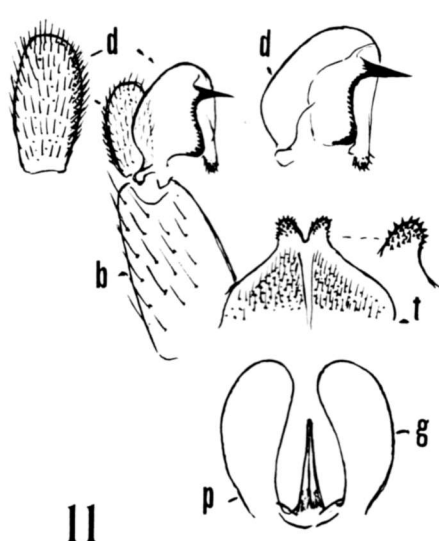
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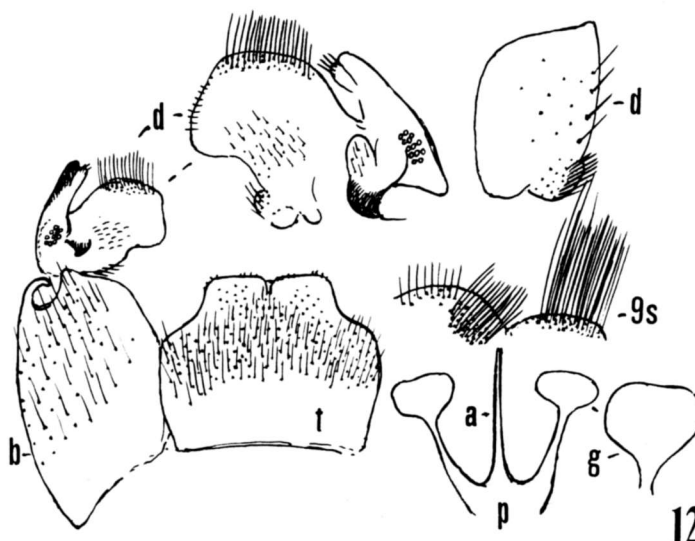
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10



11



12

Figs. 8-12. 8-10, venation; 11 and 12, male hypopygium. 8 and 11, *Tipula* (*Yamatotipula*) *koikei* sp. nov.; 9 and 12, *Tipula* (*Yamatotipula*) *latemarginata platyspatha* subsp. nov.; 10, *Tipula* *nocticostata* sp. nov. a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; p, phallosome; s, ninth sternite; t, ninth tergite.



membrane extensively clear light yellow, extended ventrad behind the fore coxae. Halteres with stem whitened, knob clear yellow. Legs with coxae chiefly gray, paler apically, especially the posterior pairs; trochanters yellow; femora black, yellowed basally, narrowest on fore pair where about one-fourth is included, on the other femora nearly the basal half; tibiae and tarsi black; terminal tarsal segment beneath before apex conspicuously produced; claw with a single small erect point. Wings (Fig. 8) brownish yellow, prearcular and costal fields conspicuously bright yellow; stigma dark brown; wing tip, including cells  $R_2$  to  $M_1$  strongly infuscated; restricted brown seams at cord and over vein  $Cu$ ; veins brown,  $Sc$ ,  $R$  and prearcular veins yellowed. Venation: Petiole of cell  $M_1$  about one-half  $m$ .

Abdomen with second tergite brownish yellow, succeeding tergites dull black, posterior borders narrowly pale yellow, lateral margins broadly yellow; basal sternites yellow, outer segments dark brown, hypopygium brownish black. Male hypopygium (Fig. 11) with tergite,  $t$ , narrowed on posterior half, apex with two relatively small lobes that are separated by a narrow V-shaped notch, lobes with numerous minute blackened spinoid setae. Basistyle unmodified. Dististyles,  $d$ , as shown; outer style short, only slightly more than twice as long as the width at base, apex very obtuse; inner style with beak slender, above its base with a powerful straight black spine. Aedeagus small, straight, the subtending gonapophyses,  $g$ , appearing as very large flattened dark-colored sessile blades, the apices obtuse. Eighth sternite narrowly transverse, posterior border nearly straight, with numerous setae that are not concentrated into groups.

Holotype ♂, Kitakanbara, Sugatani, Echigo, Honshu, May 8, 1955 (H. Koike); Baba No. 468.

The species is named for the collector, Mr. H. Koike, who secured many interesting crane flies for Dr. Baba. It is readily distinguished from other members of the *sempiterna* group of the subgenus by the details of body coloration and by hypopygial structure, such regional species including *bitumidosa* sp. nov., *misakana* Alexander, *sempiterna* Alexander, and *tsurugiana* Alexander. The conspicuous gonapophyses are somewhat as in the otherwise very different *nigrolamina* Alexander, of northern Korea.

***Tipula (Yamatotipula) latemarginata platyspatha* subsp. nov.**

♂.—Length about 15 mm; wing 18 mm; antenna about 6 mm.

Differs from typical *latemarginata* Alexander chiefly in slight distinctions in the hypopygium, especially the ninth tergite, and is best considered as representing a southern race.

Male hypopygium (Fig. 12) with the lobe of tergite,  $t$ , broad, apex virtually truncate, the median emargination scarcely evident; spinoid setae virtually lacking, represented only by scattered microscopic points. Gonapophysis,  $g$ , with the spatulate apex very broad and conspicuous, transversely oval in outline. Other hypopygial details as shown, the inner and outer dististyles in separate subfigures.

Holotype ♂, Mount Amakazari, Echigo, Honshu, 500 meters, June 3, 1955 (Y. Maruyama); Baba No. AM 21.

Synonymies in this species include the following :

*Tipula latemarginata* Alexander ; Ann. Ent. Soc. America, 14 : 128-129 ; 1921. Types from Sapporo, Japan ; a pest of rice, as discussed by Kuwayama, 1946.

*Tipula coerulescens* Lackschewitz ; Arbeit. Naturforscher-Ver. Riga, Neue Folge Heft 15 : 9-10 ; 1923. Savchenko, Fauna S. S. S. R., No. 79, Diptera II, No. 3 : 270-271 ; 1961, as *Tipula (Yamatotipula) latemarginata coerulescens*. Types from various stations in Kurland (Courland, western Latvia, U. S. S. R.).

***Tipula nocticostata* sp. nov.**

General coloration of head and thorax light gray, restrictedly patterned with slightly darker areas ; legs black, femoral bases yellow ; wings brownish yellow, cells *C* and *Sc*, with the stigma, dark brown, with further restricted darkenings beyond the cord ; prearcular field and vein *Cu*<sub>2</sub> light yellow ; abdominal tergites brownish black, lateral margins broadly pale, basal sternites yellowed, outer segments blackened.

♀.- Length about 17 mm ; wing 16 mm ; antenna about 3 mm.

Frontal prolongation of head obscure yellow on sides, narrowly light gray above, slightly shorter than remainder of head, nasus distinct ; palpi brown. Antennae brownish yellow basally, about the outer half passing into brown ; flagellar segments subcylindrical, basal enlargements scarcely developed ; first segment elongate, nearly equal to the succeeding two combined. Head light gray, with a very faint capillary central brown line.

Pronotum gray. Mesonotal praescutum light gray with three very faintly indicated more brownish gray stripes, the median one faintly divided by a ground line before suture ; scutum light gray, each lobe with two vaguely darker areas ; posterior sclerites light gray, parascutella more nacreous, the elevated posterior border light yellow ; katapleurotergite slightly paler gray. Pleura light gray, paler posteriorly, dorsopleural region yellow. Halteres with stem brownish yellow, knob darker brown. Legs with coxae light gray, trochanters yellow ; remainder of legs brownish black, femoral bases yellowed, on fore pair including about one-third, on hind legs about one-half of segment. Wings (Fig. 10) faintly brownish yellow, cells *C* and *Sc* distad of crossvein *h*, together with the stigma, dark brown ; extreme distal margins of outer radial cells and a spot in bases of cells *R*<sub>3</sub> and *R*<sub>5</sub> adjoining the cord dark brown ; prearcular field and vein *Cu*<sub>2</sub> (immediately behind vein *Cu*<sub>1</sub>) clear light yellow, including the veins ; oblitative areas before stigmas and across base of cell 1st *M*<sub>2</sub> whitened ; less evident whitened longitudinal streaks in cells *R*, *M* and the Anals ; veins brown except as described. Most longitudinal veins beyond cord, as well as outer ends of *M* and 1st *A*, with trichia. Venation : *R*<sub>1+2</sub> oblique, cell *R*<sub>2</sub> at margin extensive ; petiole of cell *M*<sub>1</sub> subequal to or shorter than *m*.

Abdominal tergites brownish black, lateral margins broadly, posterior borders very narrowly pale, second tergite chiefly more yellowed ; basal sternites yellowed, fifth and succeeding segments blackened, sparsely pruinose. Ovipositor with cerci slender, the membranous tips very slightly decurved.

Holotype ♀, Mount Amakazari, Echigo, Honshu, 900 meters, June 26, 1955 (Baba);

Baba No. AM 6.

In the absence of the male I cannot place the present fly in any subgenus. The only regional members of the genus with somewhat comparable wing pattern are *Tipula* (*Yamatotipula*) *patagiata* Alexander and *Tipula nigrocostata* Alexander, the latter being most similar in the yellowed prearcular field and vein  $Cu_2$  differing evidently in the wing pattern, including the broad darkened apex and markings in cell  $M$ . Savchenko (Fauna S. S. S. R., No. 89, Diptera II, No. 4: 153: 1964) places the last named species in the subgenus *Vestiplex* Bezzi but to me such an assignment appears questionable since the male hypopygium is very different from that of any other species known to me.

*Limonia* (*Atypophthalmus*) *stylacantha* sp. nov.

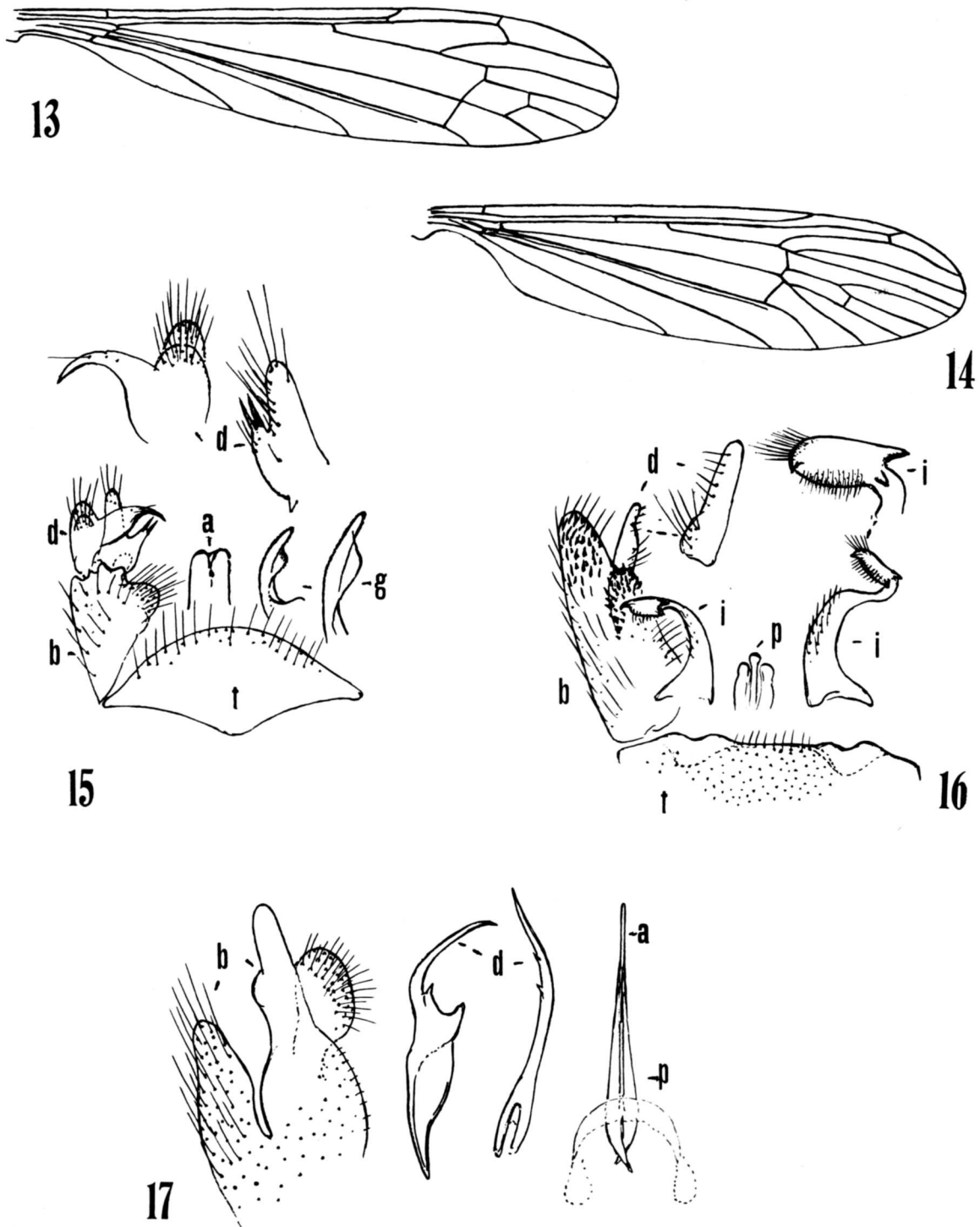
Size small (wing of male 4.3 mm); mesonotum brown, sides yellowed, pleura yellow with a conspicuous longitudinal brown stripe; legs light brown, claws simple; wings subhyaline, with certain veins broadly seamed with pale brown; male hypopygium with dististyle single but complex in structure, including two major lobes, each divided into two smaller lobules, inner lobe with the smaller arm terminating in two powerful spinoid setae; gonapophysis with mesal-apical lobe long, beyond midlength with an obtuse lateral expansion.

♂.— Length about 3.5 mm; wing 4.3 mm; antenna about 1.3 mm.

Rostrum and palpi brown. Antennae with scape and pedicel dark brown, flagellum paler brown; flagellar segments long-oval, the outer ones more slender, terminal segment about one-half longer than the penultimate, segments longer than their verticils. Head dark (discolored in type).

Pronotum light brown. Mesonotal praescutum with disk light brown, the area widened posteriorly, sublaterally broadly yellow, the margin behind the humeri very narrowly darkened; posterior sclerites of notum darker brown, especially the scutellum, the parascutella and much of pleurotergite light yellow. Pleura clear light yellow with a conspicuous brown dorsal longitudinal stripe extending from cervical region to the abdomen, passing beneath the halteres. Halteres with stem yellow, knob brown. Legs with coxae and trochanters light yellow; remainder of legs brown, including the tarsi; claws long and slender, without teeth. Wings (Fig. 13) with centers of cells subhyaline, with broad very pale brown seams over the outer veins to appear vaguely patterned; stigma oval, very pale brown, scarcely darker than the remainder; veins brown. Longitudinal veins beyond general level of origin of  $R_s$  with trichia, lacking on both Anal veins. Venation:  $Sc$  long,  $Sc_1$  ending shortly beyond midlength of  $R_s$ ,  $Sc_2$  shortly removed; basal section of  $R_{4+5}$  long, nearly in alignment with  $R_s$ , exceeding one-half  $R_{2+3}$ ;  $m-cu$  at fork of  $M$ , slightly longer than distal section of  $Cu_1$ .

Abdominal tergites dark brown, basal sternites vaguely bicolored, brownish yellow, the apices darker brown, outer segments and hypopygium more uniformly brown. Male hypopygium (Fig. 15) with tergite,  $t$ , large, the lateral ends produced, posterior margin convex, anterior border more strongly produced medially; setae concentrated along posterior border. Basistyle about one-half larger than dististyle



Figs. 13-17. 13 and 14, venation; 15-17, male hypopygium. 13 and 15, *Limonia (Atypophthalmus) stylacantha* sp. nov.; 14 and 16, *Pedicia (Tricyphona) orophila trichophora* subsp. nov.; 17, *Molophilus (Molophilus) memnon* sp. nov. a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; i, interbase; p, phallosome; t, ninth tergite.

and its appendages, ventromesal lobe short, rounded. Dististyle, *d*, single but complex in structure, body oval, outer end bilobed, each lobe with long setae; rostral prolongation long, base widened, outer half narrowed and curved to the acute tip, on inner margin below the prolongation with a large lobe that is nearly as large as body of style, conspicuously bilobed, the outer part larger, with a few long setae on inner margin, before midlength with a smaller lobe that terminates in two powerful spinoid setae (on one side of type with a further rudimentary spine); the two elements of the style, as described, shown separately and enlarged in subfigures. Gonapophysis, *g*, with mesal-apical lobe beyond midlength with an obtuse lateral expansion. Aedeagus, *a*, bilobed at apex.

Holotype ♂, Kurokawa, Echigo, Honshu, July 2, 1955 (Baba); Baba No. 371.

In its general appearance the present fly is similar to *Limonia* (*Atypophthalmus*) *inusta* (Meigen), syn. *angustistria* (Alexander), in eastern Asia, differing evidently in hypopygial structure. Edwards (Trans. Soc. British Ent., 5, part 1: 32; 1938) was the first to indicate that this group of crane flies was referable to the subgenus *Atypophthalmus* Brunetti, with many species presently known in the Oriental and Ethiopian regions. In hypopygial structure the new species is very different from the other Japanese member of the subgenus, *umbrata* (de Meijere), syn. *subumbrata* Alexander.

***Pedicia* (*Tricyphona*) *orophila trichophora* subsp. nov.**

♂.- Length about 12 mm; wing 10 mm; antenna about 1.6 mm.

Rostrum and palpi brownish black. Antennae 17-segmented; scape and pedicel light brown, flagellum brownish black, segments long-oval. Head black, gray pruinose, vertical tubercle darker, small, simple.

Pronotum dark brown. Mesonotal praescutum with three dark chestnut brown stripes that are narrowly separated by gray interspaces; scutal lobes similarly chestnut brown, central region brownish yellow, posterior lateral angles of lobes strongly produced, yellow; scutellum plumbeous, parascutella yellow; postnotum and pleura dark brown. Halteres yellow. Legs with coxae and trochanters yellowed; femora yellow, tips brown, tibiae chiefly yellow, extreme tips darkened; tarsi black. Wings (Fig. 14) almost uniformly suffused with light brown, stigma and a vague clouding over anterior cord slightly darker; wing base not as evidently yellowed as in typical *orophila*. Venation:  $R_2$  subequal to  $R_{1+2}$ ;  $R_{4+5}$  short, with *r-m* at midlength; *m* about its own length beyond fork of  $M_{1+2}$ , *m-cu* on  $M_{3+4}$  shortly before fork. In typical *orophila*,  $R_2$  is about twice  $R_{1+2}$ ;  $R_{4+5}$  elongate, with *r-m* shortly beyond origin, the outer section long; *m* at fork of  $M_{1+2}$ , *m-cu* on vein  $M_4$ .

Abdominal tergites yellowish brown, basal segment darker; sternites yellowed, outer two segments dark brown. Male hypopygium (Fig. 16) with characters generally as in *orophila*. Interbase, *i*, large, sinuous, terminating in an oval lobe with a single decurved point at its outer end and with two recurved spines at base, the apex and lower surface of lobe with abundant setae, the former longer; stem with scattered bristles on the convex face, as shown.

Holotype ♂, Inaodake, Kyushu, 600 meters, May 16, 1952 (Issiki and Ito).

The present subspecies is close to typical *orophila* Alexander (type, Noko, Formosa, 9000 feet, June 26, 1927, collected by Issiki; Philippine Jour. Sci., 36: 463-464, pl. 1, fig. 5 (venation), pl. 2, fig. 9 (male hypopygium), differing chiefly in details of venation and in the conformation of the interbase of the male hypopygium, as described.

***Molophilus (Molophilus) memnon* sp. nov.**

Belongs to the *gracilis* group and subgroup; size small (wing less than 3.5 mm); general coloration of entire body black; knobs of halteres clear light yellow; legs brown; wings tinged with brown, prearcular field yellowed; male hypopygium with basistyle trilobed, ventral lobe terminating in a glabrous yellow paddle; dististyles subequal in length, both terminating in acute spines.

♂.- Length about 2.8-3 mm; wing 3-3.3 mm; antenna about 0.9 mm.

♀.- Length about 3.4 mm; wing 3.3 mm.

Head and appendages brownish black; antennal segments oval, ends truncated, verticils much longer than segments except outwardly.

Thorax black. Halteres pale, knobs clear light yellow. Legs with coxae and trochanters brownish black; remainder of legs brown. Wings tinged with brown, prearcular field yellowed; veins light brown, trichia dark brown. Venation:  $R_2$  some distance before level of  $r-m$ , about one-half  $R_{2+3}$ ;  $M_{3+4}$  about three to three and one-half times  $m-cu$ , the latter opposite or shortly before tip of vein 2nd A.

Abdomen black, in female more brownish black. Male hypopygium (Fig. 17) with basistyle, *b*, produced into three lobes, the dorsal one with very long setae, ventral lobe longest, its outer end a glabrous yellow paddle, mesal lobe large, oval, with very abundant long delicate setae. Dististyles, *d*, shown in separate figures for clarity; outer style with more than basal half broad, outwardly narrowed into a long nearly straight spine that narrows very gradually to the acute tip; inner style subequal in length, slender, gently curved at near two-thirds the length, thence narrowed to the acute apex, ventral surface at the curve with two acute denticles. Phallosomic plate broad, apex very obtuse.

Holotype ♂, Kurokawa, Echigo, Honshu, May 31, 1955 (Baba); Baba No. 365. Allotopotype ♀, April 27, 1955. Paratopotypes, ♂♂, May 6, 7 and 31, 1955.

In its general black coloration the present fly is most similar to species such as *Molophilus (Molophilus) nocticolor* Alexander and some others, differing especially in the hypopygial structure. This suggests the condition in *M. (M.) polycanthus* Alexander where the basistyle is more evidently armed and modified.