

New Exotic Crane-Flies (Tipulidae: Diptera). Part VIII

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, 74: 99-106, 1963. In this paper I am continuing the discussion of the Hexatomine crane-flies of India and Pakistan, based on the very extensive series of these flies taken chiefly in the Himalaya and in Manipur by Fernand Schmid, to whom I extend my deepest thanks.

Limnophila (*Prionolabis*) *coracina*, new species

General coloration black, subnitidous; antennae of male elongate; halteres yellow, apex of knob weakly infuscated; legs black, femoral bases very narrowly yellowed; wings brownish yellow, clearer yellow basally, with a restricted pale brown pattern; cell M_1 lacking; male hypopygium with both dististyles produced into slender rods; apex of gonapophysis expanded into a triangular pale blade.

♂. Length about 6.5-6.6 mm; wing 7.5-8 mm; antenna about 2.5-2.6 mm.

♀. Length about 6-6.5 mm; wing 7-8 mm.

Rostrum and palpi dull black. Antennae black throughout, elongate in male; flagellar segments oval, with a dense white

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

pubescence additional to the sparse short verticils. Head black, subnitidous; anterior vertex broad.

Thoracic notum black, surface subnitidous, pronotum more opaque. Pleura black, subopaque. Halteres yellow, apex of knob weakly infuscated. Legs black, the femoral bases very narrowly yellowed. Wings brownish yellow, base clearer yellow; a restricted pale brown pattern, including clouds at origin of R_s , cord, outer end of cell $1st M_2$ and, in cases, along basal section of vein Cu_1 on both sides of the vein; a smaller seam on Sc_2 ; veins brownish yellow, a trifle darker in the patterned areas, clear yellow in the basal region. Venation: Sc_1 ending opposite fork of R_s , Sc_2 near the tip; R_{2+3+4} from two to three times the basal section of R_5 ; cell M_1 lacking; $m-cu$ before midlength of M_{3+4} .

Abdomen, including hypopygium, black. Ovipositor with valves elongate, horn-yellow. Male hypopygium with posterior border of tergite gently bilobed, the emargination very shallow; sternite produced into a broad lobe, apex truncate, surface with numerous setae and setulae. Both dististyles enlarged basally, the outer style produced into a slender rod that is provided with numerous delicate setae; inner style with prolongation shorter, nearly glabrous, with only a few scattered punctures. Apex of gonapophysis expanded into a triangular pale blade, the inner apical angle acute.

Habitat. INDIA (Sikkim). *Holotype:* ♂, Yedang, 10,600 feet, in *Rhododendron* association, June 9, 1959 (Fernand Schmid). *Allotopotype:* ♀, pinned with type. *Paratopotypes:* 6 ♀♀, with the type. *Paratypes:* ♂♂, Chachu, 9,500–9,950 feet, May 17–21, 1959 (Fernand Schmid).

The only other described regional member of the subgenus is *Limnophila (Prionolabis) fletcheri* Senior-White, which differs in the unpatterned wings and, especially, in the structure of the male hypopygium, particularly the dististyles, gonapophysis and aedeagus. Senior-White describes the antennae of his species as being short in both sexes but these are elongate in the male, as in the present species. Other generally similar Palaearctic species include *L. (P.) cognata* Lackschewitz of Europe and

L. (P.) lictor Alexander and *L. (P.) poliochroa* Alexander of western China.

***Limnophila (Afrolimnophila) pterosticta*, new species**

Size medium (wing of male to 9 mm); general coloration of thorax brownish yellow, scarcely patterned; legs yellow; wings light yellow, all cells with abundant pale brown dots that form several broken ocelli; male hypopygium with outer dististyle entirely glabrous, inner style very stout; phallosome as in the subgenus, including narrow paddlelike gonapophyses and the slender aedeagus, its tip decurved.

♂. Length about 7–7.5 mm; wing 8–9 mm; antenna about 1.4–1.5 mm.

♀. Length about 8.5–9.5 mm; wing 8–10 mm.

Rostrum brownish gray; palpi dark brown. Antennae with scape and pedicel dark brown, flagellum pale brown or yellowish brown; proximal four flagellar segments enlarged beneath, as in the subgenus; outer segments oval, shorter than the verticils. Head brownish gray, moderately narrowed behind; anterior vertex broad, about four times the diameter of the scape.

Pronotal scutum yellowish brown, scutellum clearer yellow. Mesonotal praescutum and scutum light grayish brown to brownish yellow, scarcely patterned; postnotum and pleura slightly darker brown, dorsopleural region more yellowed. Halteres yellow, knobs light brown. Legs with coxae and trochanters yellow; remainder of legs yellow, terminal two tarsal segments dark brown, femoral tips not darkened; legs with long conspicuous yellow setae. Wings light yellow, prearcular and costal fields clear yellow; all cells with abundant pale brown dots that form more or less distinct broken ocelli at origin of *R*_s, over anterior cord, *m-cu*, outer end of cell 1st *M*, outer fork of *M*, end of vein 2nd *A*, and less evidently at ends of the other longitudinal veins; veins yellow, macrotrichia brown. Macrotrichia on *R*₂₊₃, about the outer half of *R*₄, most of *R*₅, *M*₁, *M*₂ and outer ends of *M*₃ and *M*₄, lacking on veins before cord excepting *R*. Venation: *h* not clearly apparent; *R*_s long; cell *M*₁ from about one and one-half to twice its petiole; *m-cu* at near midlength of *M*₃₊₄.

Abdominal tergites light brown, sternites more yellowed; hypopygium light brown. Male hypopygium with mesal face of basistyle provided with numerous long yellow setae. Dististyles terminal, the outer glabrous, slender, at apex bent at about a right angle into a slightly curved blackened spine; inner style very stout, subrectangular in outline, the rounded apex recurved. Phallosome including the elongate aedeagus, narrowed outwardly and strongly curved to the slender apex; apophyses appearing as narrow subtending pale glabrous paddles, as in the subgenus.

Habitat. INDIA (Manipur). *Holotype:* ♂, Sirhoi Kashong, 7,500 feet, July 11, 1960 (Fernand Schmid). *Allotopotype:* ♀. *Paratopotypes:* 9 ♂ ♀, with the types, June 9, July 12-13, 1960 (Fernand Schmid).

The present fly is one of numerous Oriental species that I now am referring to the subgenus *Afrolimnophila* Alexander (*Ruwenzori Expedition* 1934-35, 1, no. 7: 284-285; 1956), hitherto considered as being strictly Ethiopian in distribution. The Oriental species include *Limnophila* (*Afrolimnophila*) *manipurensis* Alexander, *L. (A.) bicoloripes* Alexander, *L. (A.) raoana* Alexander, and several further species defined in this paper, and very probably also *Limnophila multipunctipennis* Brunetti and *L. senior-whitei* Alexander, all distinguishable among themselves by the coloration of the body and legs and especially the pattern of the wings. Outside the Indian subregion, the Philippine *L. (A.) petulans* Alexander belongs here and also very probably certain species from Malaya and Borneo, as *Limnophila guttulata* Edwards, *L. murudensis* Edwards, and *L. pendleburyi* Edwards. All species of *Afrolimnophila* have the hypopygium with the outer dististyle entirely glabrous and the phallosome, including both the aedeagus and gonapophyses, of characteristic conformation. The typical subgenus *Limnophila* Macquart (*Poecilostola* Schiner) superficially resembles the present subgenus in its patterned wings and enlarged basal flagellar segments but has the male hypopygium of quite different structure, with the outer dististyle setiferous and the phallosome distinct.

***Limnophila (Afrolimnophila) apicifusca*, new species**

General coloration gray; antennal scape black, gray pruinose, flagellar segments yellow; knobs of halteres darkened; legs yellow, tips of femora broadly brownish black; wings very pale yellow with dark brown costal spots that involve both cells *C* and *Sc*; very abundant paler brown dots in all cells, arranged as more or less complete ocelli at origin and fork of *Rs* and end of *2nd A*; vein *Sc* long, *Rs* square and short-spurred at origin; cell *M*₁ small, about one-half its petiole.

♀. Length about 8 mm; wing 8 mm.

Rostrum gray; palpi black. Antennae with the elongate scape black, gray pruinose, pedicel dark brown; flagellar segments obscure yellow, the outer ones a little darkened; flagellar verticils long and conspicuous. Head brownish gray.

Pronotum dark gray, a little infuscated mid-dorsally. Mesonotum dark, light gray pruinose, discolored in type, presumably with praescutal stripes. Pleura chiefly dark brown, sparsely pruinose; dorsopleural membrane dusky. Halteres with stem obscure yellow, knob weakly darkened. Legs with coxae brown; trochanters obscure yellow above, brown beneath; femora and tibiae yellow, tips of former conspicuously brownish black, of the latter very narrowly so; basitarsi yellow, tips very narrowly infuscated; remainder of tarsi broken. Wings with the ground very pale yellow, base and costal region not differentiated; a heavy brown spotted and dotted pattern that is about equal in area to the ground; three darker costal spots that include cell *Sc* behind, the second above origin of *Rs*, the third at tip of *Sc*₁; three further marginal spots, at *R*₁₊₂, *R*₃ and *R*₄, the second of these larger; a very narrow darkened seam over anterior cord; very abundant paler brown dots in all cells, those before cord chiefly confluent; areas at origin and fork of *Rs* and at end of *2nd A* forming more or less complete ocelli, the first complete; veins light brown, more yellowed in the ground areas, especially evident in the costal field. Venation: *Sc* long, *Sc*₁ ending shortly beyond fork of *Rs*, *Sc*₂ near its tip; *Rs* square and short-spurred at origin; *R*₂ longer than *R*₁₊₂; *R*₂₊₃₊₄ a little longer

than basal section of R_5 ; cell M_1 small, about one-half the petiole; $m-cu$ at or just beyond midlength of M_{3+4} .

Abdomen dark brown; apex broken.

Habitat. PAKISTAN. *Holotype:* ♀, Kaghan, North West Frontier Province, 6,688 feet, June 27, 1953 (Fernand Schmid).

Allied regional species include *Limnophila* (*Afrolimnophila*) *pterosticta*, new species, *L. (A.) pusan*, new species, and *L. (A.) scabristyla*, new species, all distinguished among themselves by the coloration of the legs and wings. In the present fly, attention should be called to the fact that the costal darkenings of the wings involve both cells *C* and *Sc*.

Limnophila (*Afrolimnophila*) *perdelecta*, new species

General coloration of thorax gray; halteres light yellow; legs yellow, tips of femora vaguely more darkened; wings pale yellow with a scattered pale and darker brown spotted pattern that forms about three narrow broken crossbands; male hypopygium with outer dististyle glabrous.

♂. Length about 6.8–7 mm; wing 7.6–7.8 mm; antenna about 1.2–1.3 mm.

Rostrum and palpi brown. Antennae relatively short, dark brown; proximal five flagellar segments more enlarged, as in the subgenus, verticils of upper surface elongate, outer segments more elongate, the verticils shorter. Head brownish gray with a capillary darker brown vitta on vertex; anterior vertex broad, nearly four times the diameter of the scape; setae of vertex long, yellow, the posterior ones shorter and darker.

Prothorax gray. Mesonotum almost uniformly gray, the praescutum with two scarcely indicated more brownish intermediate stripes. Pleura clearer gray; dorsopleural membrane buffy. Halteres light yellow. Legs with coxae brownish gray; trochanters brown; remainder of legs yellow, tips of femora vaguely more darkened, of tibiae narrowly but more evidently infuscated, outer tarsal segments darkened; legs with long setae. Wings pale yellow, prearcular and costal regions more saturated yellow; a scattered pale brown spotted pattern, including about eight small darker brown spots along costal border; other narrow dark

seams over cord and outer end of cell *1st M*₂; a series of somewhat paler brown marginal spots at ends of all longitudinal veins, including also one at midlength of cell *2nd A*; on disk a few still paler brown spots, the whole pattern tending to form narrow broken crossbands opposite origin of *Rs* and end of *2nd A*, cord, over the outer medial field and more brokenly nearer the wing base; veins yellow, light brown in the patterned areas. Venation: *Sc*₁ ending about opposite fork of *Rs*, *Sc*₂ near its tip; *R*₂ and *R*₁₊₂ short, subequal; cell *M*₁ subequal to its petiole; *m-cu* beyond midlength of cell *1st M*₂.

Abdomen dark brown, hypopygium more yellowish brown. Male hypopygium with posterior tergal border convexly rounded, with both long and short setae and abundant microscopic setulae. Basistyle with very long setae, the longest exceeding the outer dististyle. Dististyles terminal; outer style glabrous, narrowed gradually to the acute tip, inner style with basal lobe stout, apex recurved. Gonapophyses appearing as simple pale paddlelike blades. Aedeagus narrowed to the slender decurved apex.

Habitat. INDIA (Sikkim). *Holotype*: ♂, Selep, 7,000 feet, July 27, 1959 (Fernand Schmid). *Paratypes*: 3 ♂♂, Chumtang, 5,120 feet, July 18, 1959; 1 ♂, Namnasa, 9,500 feet, July 13, 1959; 1 ♂, Tena, 4,600 feet, August 1, 1959 (Fernand Schmid).

Limnophila (Afrolimnophila) perdelecta is readily told from all other regional members of the subgenus by the nature of the wing pattern. *Limnophila asura* Alexander is generally similar but has the apex of the outer dististyle shallowly bifid and its strict subgeneric position is uncertain. It may be found to be desirable to slightly modify the subgeneric hypopygial characters so as to accommodate this species in *Afrolimnophila*.

Limnophila (Afrolimnophila) pusan, new species

General coloration of thorax light gray, praescutum with three obscure orange stripes; antennal flagellum yellow; legs yellow; wings light yellow with a conspicuous spotted and semiocellate brown pattern, the major ocelli with darkened centers; *Rs* long; ovipositor with cerci very long and slender.

♀. Length about 9 mm; wing 8.5 mm.

Rostrum light brown, palpi darker. Antennae with scape and pedicel light brown, flagellum yellow, the enlarged proximal four or five segments clear light yellow, outer segments slightly darker, elongate. Head light yellowish brown; anterior vertex broad.

Prothorax obscure yellow. Mesonotal praescutum light gray with three obscure orange stripes, scutal lobes similarly patterned; scutellum yellowish gray, a little darker medially; mediotergite gray. Pleura chiefly light yellow, more obscured dorsally. Halteres with stem obscure yellow, knob weakly darkened. Legs with coxae brownish yellow; remainder of legs light yellow, only the outer two tarsal segments a little darker; leg segments with abundant long coarse yellow setae. Wings light yellow, with a conspicuous spotted and semiocellate brown pattern, in area subequal to or exceeding the ground; larger brown markings at origin of R_s , fork of R_s and at midlength of outer radial field, these appearing as large vague ocelli with darkened centers; an open ocellus over outer end of cell $1st M_2$; cell C with about 18 transverse brown lines, narrower than the interspaces; over most of wing the smaller markings appear as subcircular spots or dots, in cell M and outer medial field more confluent; veins yellow, not darkened in the patterned areas. Longitudinal veins beyond cord with macrotrichia, lacking on R_{2+3+4} , M_{3+4} and Cu_1 . Venation: Sc long, Sc_1 ending just before fork of R_{2+3+4} , Sc_2 near its tip; R_s long; cell M_1 about one-half longer than its petiole; $m-cu$ at near one-third M_{3+4} .

Abdominal tergites light brown, sternites more yellowed. Ovipositor with cerci very long and slender, nearly straight.

Habitat. INDIA (Kumaon). *Holotype:* ♀, Khumyara, Pauri Gahrwal, 4,300–5,000 feet, May 3, 1958 (Fernand Schmid).

The most similar species is *Limnophila (Afrolimnophila) pterosticta*, new species, of Manipur, which has the coloration of the body and appendages much the same, differing evidently in the wing pattern, the spotted and dotted brown pattern being much more abundant, with the ocellate markings open.

Limnophila (Afrolimnophila) scabristyla, new species

Size medium (wing of male about 6.5 mm); general coloration of head and thorax brown, pleura darker; antennal flagellum yellowed; legs light yellow; wings very pale yellow with subequal pale and darker brown transverse areas, more extensive and confluent in outer radial field, wing tip narrowly pale yellow; male hypopygium with outer dististyle relatively short and stout, the outer fourth with numerous appressed spinulae; aedeagus relatively stout.

♂. Length about 6 mm; wing 6.4 mm; antenna about 1.3 mm.

Rostrum and palpi brown. Antennae with scape and pedicel brown, flagellum yellowed; proximal flagellar segments as in the subgenus, lower face slightly produced, without verticils; outer segments progressively lengthened, the intermediate ones shorter than their verticils. Head dark brown.

Thorax of unique type partly destroyed by fungi; notum yellowish brown, posterior sclerites and pleura dark brown. Halteres dark brown. Legs with coxae dark brown; remaining segments light yellow, terminal tarsal segment darkened; vestiture long, subappressed. Wings with ground very pale yellow, subequal in area to the abundant small brown transversely spotted pattern, these areas larger and becoming confluent in outer radial field, the smaller paler brown lines transverse, occurring in all cells; narrow complete pale brown bands at origin of R_s and over cord, completely traversing the wing; darkened pattern not or scarcely ocelliform as in some related species; wing apex in cells R_4 and R_5 pale yellow; subcostal interspaces light yellow; veins light brown, a little darker in the patterned areas. Venation: Sc_1 ending about opposite the fork of R_s . Sc_2 near its tip; R_{2+3+4} subequal to basal section of R_5 ; cell M_1 about one-half longer than its petiole; $m-cu$ at near one-third M_{3+4} .

Abdomen, including hypopygium, dark brown. Male hypopygium with the tergite transverse, posterior border gently convex, darkened by numerous microscopic black setulae, with many very long yellow setae interspersed. Dististyles terminal; outer style relatively short and stout, very gradually narrowed to the

acute tip, before apex with numerous appressed spinulae to produce a scabrous appearance; inner style very short and broad, apex obtuse, surface with numerous long yellow setae. Gonapophyses appearing as slender pale blades, the tips narrowly obtuse. Aedeagus relatively stout.

Habitat. INDIA (Sikkim). *Holotype:* ♂, Manu, 4,920 feet, August 5, 1959 (Fernand Schmid).

In its general appearance the present fly is most similar to species such as *Limnophila* (*Afrolimnophila*) *pterosticta*, new species, which differs in coloration of the body, legs and wings, and especially in hypopygial structure, including the outer dististyle.