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FURTHER NOTES ON FAR EASTERN TABANIDAE WITH DESCRIPTIONS OF FIVE NEW SPECIES

By Cornelius B. Philip

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH
SERVICE, NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE OF ALLERGY
AND INFECTIOUS DISEASES, ROCKY MOUNTAIN LABORATORY, HAMILTON, MONTANA

Described below are five new species, *Tabanus acallosus* from the Philippines, *T. murchi* from Korea, and *Hybomitra nola*, *H. nura*, and *Chrysops abavius* from Central China, as well as additional characteristics in both sexes of *T. rossi* Philip also from the Philippines; the last was known previously only from the holotype female (Philip, 1959). The Philippine material was received from the Bernice P. Bishop Museum, Honolulu, Hawaii, *H. nola* and *H. nura* from the U. S. National Museum (USNM), and *C. abavius* from the California Academy of Sciences (CAS), in which institutions the respective types are located.

Among Tabaninae of the Orient and South Pacific, those without frontal callosities in the females (acallos species) are of special interest (Group IV of Ricardo, 1911). When more is known about these uncommon species, data that could have phylogenetic or zoogeographic significance are anticipated. There appears to be intergradation or parallelism displayed here between species of *Tabanus*, the austral *Cydistomyia* and the boreal *Atylotus*, with remarkable similarities in dull, rather patternless appearance. It is likely these are primitive elements in the subfamily, analogous to the acallos Oriental species of subgenus *Neosilvius* discussed by Philip and Mackerras (1960).

The early described species were all placed in *Tabanus*, namely, *T. virgo* Wied. from E. India (syns., *T. albulus* Walk. and *T. puella* Walk.); *T. nemocallosus* Ric. from Bengal, India; *T. negativus* Ric. from Formosa; *T. erythrocephalus* van der Wulp from Halmahera Is.; *T. leucopterus* van der Wulp from Aru Is.; *T. acallus* Szilady (1926) from Sikkim; and *T. caesius* Walk. from "unknown locality" but undoubtedly New Guinea, since Oldroyd (1949) found another matching specimen from there. Oldroyd transferred *T. caesius* to *Cydistomyia* in which he described acallos *C. immatura* and *C. pseudoimmatura* also from New Guinea. The types of van der Wulp's two species in Leiden Museum seen by me in 1960 (on a travel grant from the Marsh Fund of the National Academy of Sciences)

also belong in *Cydistomyia* because of their bare subepaulets. I am indebted to Mr. Oldroyd for confirming that Walker's and Ricardo's types from India are true *Tabanus* related to the following new Philippine species of *Tabanus* also with hairy subepaulets, though it has a rather narrow frons for the group; probably the Sikkim (Himalayan) species, *acallosus*, also belongs to this group.

***Tabanus acallosus* Philip, n. sp. Fig. 1.**

A small grayish-brown species with narrow front, callosity missing or present only as a fine reduced line, beard white, antennae orange and wings clear with setulose subepaulets but no spur veins.

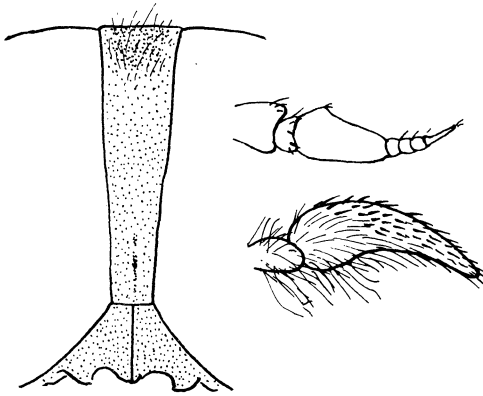


Fig. 1. Frons, antenna and palp of *Tabanus acallosus*, n. sp. (paratype ♀).

Holotype ♀, 7 mm. Eyes bare, uniformly sea-green (relaxed). Frons and subcallus yellow pollinose with sparse black hairs at vertex, index 1 : 8.5, moderately convergent below; callosity represented by an indistinct, short, fine, reddish, broken line. Face and cheeks whitish pollinose and pilose. First 2 antennal segments pale yellow with sparse white hairs and a few black ones intermixed above; plate orange, rather broad, scarcely excised, the dorsal tooth low but sharp; style shorter, orange, apical segment unusually slender and pointed. Palpi whitish, rather elongate, but basally enlarged, with white and a few black hairs. Proboscis pale

brown.

Thorax and scutellum gray-brown, a little darker than abdomen, unlined, with sparse yellow, and some black hairs dorsally; pleural pile white. Legs pale red, mostly white-haired, but black ones apically on the femora, and predominantly on 2 hind pairs of tibiae. Wings with yellow veins, marginal cells rather elongate, R_5 open; costal cells clear. Halteres pale reddish.

Abdomen reddish brown, darker caudally. Mostly black-haired dorsally, yellowish ventrally, and accentuated on tergal incisures.

Holotype ♀ (BISHOP), Passig, Balabac I., Philippines, 4-III-1957, Yoshio Kondo.

Paratype ♀, same data, and in close agreement except the linear "callosity" is even less apparent as figured. In collection of the author.

***Tabanus rossi* Philip**

A series of 11 ♂ and 6 ♀ taken on Tarumpitao Point, Palawan I., in part at light, by H. E. Milliron, permits description additional to the holotype from Mindoro I. (Philip, 1959). Length 13-15.5 mm. In certain lights, the median triangles appear to extend forward, nearly crossing the tergites in the ♀. The triangles are smaller, more discrete in

the ♂.

Allotype ♂, 17 mm. Agrees with ♀ except for usual sexual differences, and is readily associated by the brown abdomen with small, yellow pollinose and pilose, median triangles not extended along incisures; wings with brown fore-border, and faint clouds at base of vein R_4 . Scapes are proportionately more swollen. Palpi are subovoid with blunt points, a little longer than thick. Head wider than thorax, upper eye facets greatly enlarged in upper 2/3, occipital margin of small facets broad to vertex, and tubercle small, narrow at about eye level. Collected 18-V-1958. In Bishop Museum and some of each sex in collection of the author.

Tabanus murdochi Philip, n. sp. Fig. 2.

A medium-sized, hoary gray, compact-bodied species with two narrow, admedian dark lines on the abdomen enclosing a gray stripe, a dark midventral band, concolorous reddish legs and wings lightly tinted and with short spur veins.

Holotype ♀, 15.5 mm. Eyes bare, black, unbanded (relaxed), a moderate post-ocular rim present, margined behind with short white hairs. Frons rather narrow, sides slightly divergent above, index 1 : 6.3, buff-gray pollinose, and with short, sparse black and pale hairs at vertex. Callosity resting on subcallus, tall triangular, reddish brown, the lower corners touching the eyes and tapered above into a narrow keel attenuated at the upper 1/3. Subcallus buff-gray pollinose. Face and cheeks gray pollinose and beard whitish pilose. Antennae brick red including the style, with short black hairs on the basal segments; plate short, breadth equal to length of the style, the basal tooth low but subacute. Palpi nearly as long as proboscis, slender, and blunt apically, with appressed black hairs, the basal segments white-haired.

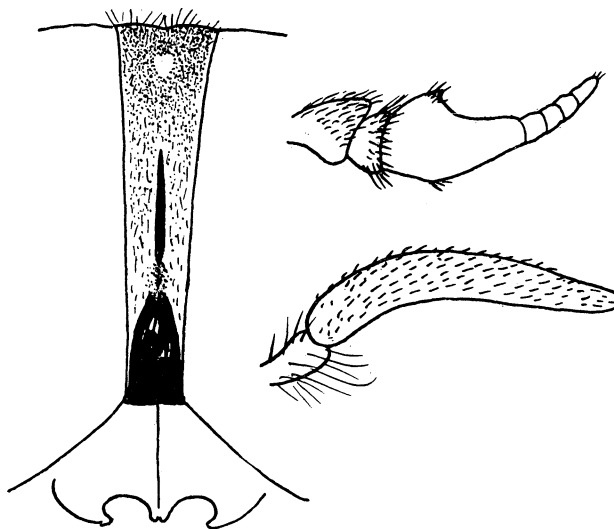


Fig. 2. Frons, antenna and palp of *Tabanus murdochi*, n. sp. (type ♀).

Thorax and scutellum dark (probably discolored) with faint pale lines anteriorly, predominantly pale yellow-haired, some black hairs intermixed on the pleura. Coxae and femora reddish with mostly white hairs, a few black ones on the dorsum of the latter; tibiae and tarsi reddish with mostly black hairs, the fore pairs darkened distally; hind-tibial fringe not accentuated. Wing-veins and halteres reddish brown. Cell R_5 wide open. Subepaulets hairy. Halteres pale brown.

Abdomen dull grayish with pale yellow to whitish hairs on the median band, across the incisures, and on the broad sides of the venter; black hairs intermixed on the sides of tergites, and accentuating a wide midventral dark red, integumental stripe. The middorsal pale band on tergites 2 to 4 formed of broad truncated triangles between the paired, admedian blackish dashes.

Holotype ♀, Survon, Kyon gi-Do, Korea 19-VII-1944, Paik. In the collection of the author. Named for Captain Wallace P. Murdoch whose monograph will greatly advance the systematic knowledge of the area.

Except for another Korean species being described by Captain Murdoch, this appears to have no close relatives in the eastern Asiatic fauna. In general build, this species has some resemblance to a large, gray *Atylotus*, but the front is that of a typical *Tabanus*.

***Hybomitra nola* Philip, n. sp.** Fig. 3.

A hairy, medium-sized black species with bright-orange-haired abdomen, wide front and wings with distinct, isolated clouds.

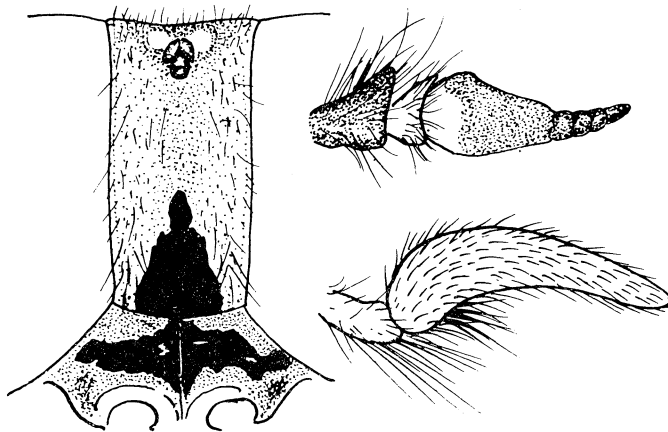


Fig. 3. Frons, antenna and palp of *Hybomitra nola*, n. sp. (type ♀).

Holotype ♀, 15 mm. Eyes distinctly hairy, 3 heavy bands and lower border purple on a green ground (relaxed). Frons wide, parallel-sided, index about 1 : 2.0, buff-gray pollinose, densely black-haired; ocelligerous tubercle prominent, with vestigial ocelli, and flanked by a pair of flat, yellow bare areas (obscured by hair in type); callosity black, finely rugose, short, bell-shaped (hence the name, a little bell). Subcallus black, thinly gray polli-

nose with small, irregular, worn areas in the middle. Face and cheeks buff-yellow pollinose and pilose. Antennae red-brown with coarse black hairs basally, blackened beyond low dorsobasal angle of plate, latter nearly 2 × longer than wide and narrower than length of style. Palpi reddish brown, rather slender, with shaggy black hair, long yellow hairs ventrobasally and on basal segment.

Thorax including antealar tubercles and scutellum black; vestiture pale yellow with some black hairs intermixed dorsally. Coxae and femora blackish gray with yellow and some black hairs, 2 hind pairs of femora reddish outwardly; tibiae reddish with mostly yellow hair basally, black apically. Wings light brown, darkened in costal cell, and on cross-veins and behind stigma; no spur vein. Halteres dark brown.

Abdomen black, covered with coarse, bright orange hairs above changing to pale yellow at tip and below.

Holotype ♀ (USNM), Yachow, Szechwan Prov., China, 11-VII-30, D. C. Graham.

Paratypes ♀ ♀, China. Five, same data as holotype. Sixteen others by same collector from 28-VI to 1-X-1923 to 1930, from following localities: 1, Lu Ding, Tibet Border, 3, Yao Gi, 1200-2400 m, and from Szechwan Prov., 5 Muping, 1200-2000 m, 2, 15 km. S. W. Tatsienlu, 2600-4000 m, 2, Suifu, 1, Songpan, 2400-2900 m. In USNM, CAS, L. L. Pechuman and the author's collections. One ♀ Szechwan Prov., Lianghokuo, 6-VIII-1938, Dean Sage, Jr. In American Museum of Natural History.

Variations are observed in more restricted callosities, complete intergradation between totally pollinose and totally bare subcalli (as observed in Nearctic *H. tetrica* (Mart.)), antennal plates predominantly red, hind-tibial fringes nearly all white to completely black, and 6 have abdomens with vestiture above and below entirely pale yellow. While the abdomen in unworn specimens is densely covered above and below with orange to pale yellow hair not arranged in triangles or patches, which obscures the underlying black integument, small reddish integumental spots may be seen laterally on tergites 2 and 3 in a few greased or worn individuals.

A male from E. Nepal, 2700 m (15 mm) in CAS may be the same, but is not so assigned because of minor differences. Frontal triangle entirely pollinose. Upper genal hairs coarse, black; remainder of head and lateral thoracic hairs bright orange. Abdomen laterally and midventrally behind sternite 2, mostly black-haired. Bases of all tibiae white-haired. Area behind stigma a little more strongly clouded.

There is considerable resemblance of the female to northern *H. stigmoptera* (Ols., NEW COMB.) which has more yellowish hair accentuated on the incisures, and a narrower frons with more quadrate callosity. *H. wyvillei* (Ric., NEW COMB.) from the Himalayas is smaller, and also has more yellowish hair, and narrower frons with more reduced callosity. *H. brevifrons* (Krob., NEW COMB.) and *H. svenhedini* (Krob., NEW COMB.) from South Kansu, China, have smaller callosities; the former has white beard and three rows of yellow-gray hair, while the latter lacks wing-clouds but has suggestions of triangles on the abdomen, though it has yellow-red hair.

***Hybomitra nura* Philip, n. sp.**

A shaggy blackish species with bright orange vestiture on abdomen and tibiae, that is near enough to the preceding that it can be adequately described by the differences (hence the name meaning kin).

Holotype ♀, 17 mm. Frons wider, index 1 : 1.7, ocelligerous tubercle flatter, basal callosity wider than tall, finely rugose, without upward extension. Subcallus shallower, shining black, border above and laterally with dark pollen, and 2 large brown crescents above antennal bases. Beard and pleura white-haired, notal and scutellar pile sparse orange- and black-haired. Legs bi-colored, femora and apical 1/4 of fore tibiae black, remainder of tibiae bright orange, vestiture concolorous. Wings subhyaline, costal cell pale yellow, isolated clouds not as prominent. Abdomen not as densely orange-haired so that the wider reddish-orange sides of tergites 2 and 3 are revealed enclosing a serrated median black band; sternites 1 and 2 pale yellow-haired, remainder orange as above. No terminal yellow hairs.

Holotype ♀ (USNM), Szechwan, China, 15 km SW of Tatsienlu, 25 to 27-VI-1923.

2600–4000 m, D. C. Graham.

Chrysops abavius Philip, n. sp.

A small, blackish deerfly with basally yellow abdomen but black tergite 1, and contrasting wing picture with narrow apical spot.

Holotype ♂, 8 mm. Eyes contiguous their entire inner lengths, upper facets but little enlarged. Occipital tubercle prominent, blackish. Frontal triangle velvety black. Face and cheeks shining black, separated by reduced sublateral, yellow pollinose stripes. Antennae slender, yellowish, darkening on the flagellums which are distinctly longer than the scapes. Palpi reddish brown with black hairs; rather slender and pointed, and as long as the theca.

Thorax, including scutellum, subshiny black, a pair of bright yellow, narrow, golden-haired stripes above and below bases of wings. Legs with dark brown femora, tibiae paler brown, hind pair somewhat swollen and distinctly thicker than femora. Halteres blackish. Wings dark brown with 3 hyaline areas, a large half-moon shaped one in anal area, a narrow inverted triangle crossing apices of the 2 basal cells and attenuated through middle of cubital cell nearly to hind margin, and a large half-moon-shaped distal area margined by the evenly concave outer margin of the crossband which continues as an arc along hind margin of apical spot but never quite touches vein R_{2+3} , apical spot terminating at apex of wing in upper corner of cell R_4 . First basal cell thus hyaline in almost all the outer 1/2, and second diagonally across the outer 1/4; infuscation along sides of cubital cell not joined across its base as in most other species.

Tergite 1 sharply black except for yellow on extreme lateral edges, in contrast to entirely bright yellow tergite 2. Tergite 3 black crossed by 3 wide yellow stripes, behind which are 3 smaller spots on the black tergite 4. Remainder black. Venter yellow with basal, inverted black triangle not quite reaching middle of sternite 2 from sternite 1. Sternite 3 yellow in basal 1/3 and along edges. Remainder of venter black.

Holotype ♂ (CAS), Suisapa, 1000 m, Lichuan Distr., W. Hupeh, China, 20–VIII–1948, Gressitt and Djou.

There is some likeness to *C. suavis* Lw. and *C. basalis* Shir. but it is readily distinguished from these and related species by the combination of black face, entirely yellow tergite 2, wing pattern with narrow apical spot slightly wider than cell R_1 and outer margin of crossband evenly concave, and swollen hind tibiae. *C. szechuanensis* Krob. (type ♂ seen through courtesy of Professor Felix Bryk of Riksmuseum, Stockholm) differs in narrow, complete, midfacial, yellow pollinose stripe, two admedian plumbeous stripes on the notum, continuous median black bands on the abdomen above and below, and median hyaline area in cubital cell widened toward the margin.

Female of *C. abavius* unknown.

Remarks. The name *abavius*, meaning "forefather," commemorates the source in central China where *Metasequoia* trees of ancient lineage have survived as described by Gressitt (1953) on the Dawn-Redwood Expedition in 1948. Taken at the same time were *C. oxianus* Pleske and both sexes of *C. striatula* Pech. Though the unique *Gressittia birumis* Philip and Mackerras (1960) taken in this same area, appears to have derived from African ancestry, *Chrysops* spp., *Atylotus fulvus* (Meig.) and such representatives of *Tabanus*

as *amaenus* Wlk., *mandarinus* Schin. and *rufidens* Big. have affinities with a northern fauna, while *T. birmanicus* Bigot is distributed south to Malaya. Representatives of the more boreal *Hybomitra* were unexpectedly missing. Equivalence of floral affinities with the Nearctic flora discussed by Gressitt (op. cit.) are not evident among the Tabanidae taken by the expedition.

Hybomitra olsufievina Philip, new name.

I have received word from Dr. N. G. Olsufiev of Moscow, USSR, that *Hybomitra olsufievi* Philip (1956, Jap. J. San. Zool. 7: 230) is preoccupied by *Tabanus olsufievi* Bogatshev and Samedon (1949, Akad. Nauk. Asserb. SSR, Isv. 5: 72; reference not available to me). For *H. olsufievi* Philip I therefore propose *H. olsufievina*, new name.

SUMMARY

Described as new are *Chrysops abavius* and *Hybomitra nola* and *H. nura* from Central China, *Tabanus murdochi* from Korea, and *T. acallosus* from the Philippine Islands. New combinations include *Cydistomyia erythrocephala* (v. d. Wulp), *C. leucopterus* (v. d. Wulp), *Hybomitra stigmatoptera* (Ols.), *H. wyvillei* (Ric.), *H. brevifrons* (Krob.), and *H. svenhedini* (Krob.). Description of both sexes of *T. rossi* Phil. from the Philippines is elaborated. A new name, *Hybomitra olsufievina*, is proposed for *H. olsufievi* Philip, precoc.

REFERENCES

- Gressitt, J. L. 1953. The California Academy-Lingnan Dawn-Redwood Expedition. Calif. Acad. Sci., Proc. 28: 25-58.
- Oldroyd, H. 1949. The Diptera of the Territory of New Guinea. XIV. Family Tabanidae. Part III. Tabaninae. Linn. Soc. N. S. Wales, Proc. 73: 304-361.
- Philip, C. B. 1959. Philippine Zoological Expedition 1946-1947. Tabanidae (Diptera). Fieldiana: Zoology 33: 543-625.
- and I. M. Mackerras 1960. On Asiatic and related Chrysopinae (Diptera: Tabanidae). Philippine Jour. Sci. 88 (3): 279-324.
- Ricardo, G. 1911. A revision of the species of *Tabanus* from the Oriental Region, including notes on species from surrounding countries. Ind. Mus., Rec. 4: 113-258.
- Szilady, Z. 1926. New and Old World horseflies. Biol. Hungarica 1: 1-30.

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