

## New additions to the subgenus *Trichocera* (*Trichocera*) MEIGEN (Diptera: Trichoceridae)

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Abstract. Additional descriptions of *Trichocera colei* ALEXANDER, 1919, *T. fattigiana* ALEXANDER 1952, *T. sakaguchii* ALEXANDER, 1930 and *T. tetonensis* ALEXANDER, 1945, allow to transfer these species to the subgenus *Trichocera* (*Trichocera*) MEIGEN. Four further species are added on basis of literature data. The updated list comprises 22 species of this subgenus.

Key words: *Trichocera*.

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### I. INTRODUCTION

Already in 1938 ALEXANDER distinguished among the species of *Trichocera* MEIGEN, 1803, the major group of species with short and fused parameres and included *T. major* EDWARDS, 1921, *T. longisetosa* ALEXANDER, 1927, *T. sibirica* (EDWARDS), 1920, *T. bituberculata* ALEXANDER, 1924 and *T. tuberculifera* ALEXANDER, 1938 (ALEXANDER, 1938). Similar parameres were observed in *T. hiemalis* and several related species by KRZEMIŃSKA (1996), and in species related to *T. rectistylus* by STARÝ, who included some of these species in the nominal subgenus *Trichocera* (*Trichocera*) and gave it a new definition (STARÝ, 1998).

In the present work four other species: *T. colei* ALEXANDER, 1919, *T. fattigiana* ALEXANDER, 1952, *T. sakaguchii* ALEXANDER, 1930 and *T. tetonensis* ALEXANDER, 1945 are included in the subgenus *Trichocera* sensu STARÝ (1998), supplemented by additional descriptions. The identity of *T. tetonensis* and *T. hyaloptera* (its synonym) is discussed on the basis of type material comparison.

**A c k n o w l e d g e m e n t s.** I am very grateful to Christine DAHL for making specimens available to me and for her critical reading of the manuscript. I would like to thank John CHAINEY (NHM) for a loan of material.

### II. MATERIAL AND METHODS

The genitalia of the type specimens from AIC, preserved on slides, are figured directly from their camera pictures, without reconstruction of their three-dimensional structure. Some artifacts caused by preservation are shown and commented in the text.

## A b b r e v i a t i o n s :

AIC – The Alexander Collection of Crane flies in the Smithsonian Institution; Washington

ISEZ – Institute of Systematics and Evolution of Animals, Pol. Acad. Sci., Kraków, Poland

BMNH – The Natural History Museum (British Museum), London.

fl, f2 – first and second flagellomere

t5 – fifth tarsomere

H – holotype of *T. tetonensis*

P – paratypes of *T. hyaloptera*

## III. ADDITIONAL DESCRIPTIONS

*Trichocera (Trichocera) colei* ALEXANDER, 1919; comb. Nov.

(Fig. 1)

syn. *Trichocera (Metatrachocera) colei* ALEXANDER, 1919; DAHL, 1966

syn. *Trichocera colei* ALEXANDER, 1919

**D i a g n o s i s.** Male with gonocoxal bridge fused and highly arched, triangular, with apical protrusion; gonostyle large, with three lobes: one blackened, apical lobe directed mesad, one finger-like lobe at midlength and one lobe between these two. Parameres short, stornig, widely divergent.

**M a t e r i a l e x a m i n e d.** Holotype ♂ (hypopygium on slide), Forest Grove, Washington, Dec. 12, 1918 (F. R. Cole), AIC.

**A d d i t i o n a l d e s c r i p t i o n.** Male terminalia (Fig. 1): the flattened preparation of the hypopygium does not allow to reconstruct the exact shape of the gonostyle and the bridge; these structures are given by PRATT (1992: Fig. 13) and in the original description of ALEXANDER (1919: Fig. 39). The following characters are apparent on the slide: the bridge is fused, triangular, highly vaulted, with large, central, blackened protrusion. Gonostyle bears probably three protuberances: the largest, apical one, blackened and covered with stiff, short setae; the finger-like process in ca. midlength and one expanded lobe between these two, probably directed dorsad and hence better visible in lateral view (it is marked in ALEXANDER, 1919, but absent in PRATT, 1992;

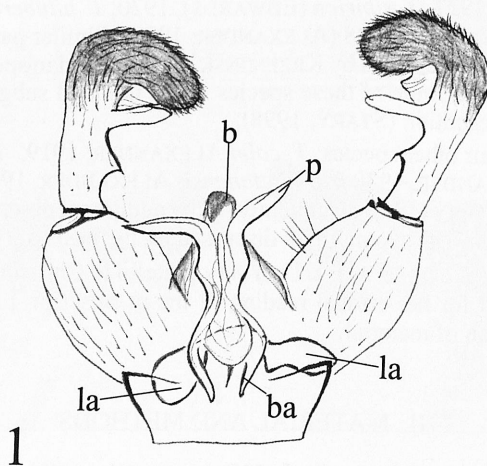


Fig.1. *Trichocera (Trichocera) colei* ALEXANDER (paratype), male genitalia ventrally (b – gonocoxal bridge; ba – basal apodeme of aedeagus; la – lateral apodeme of aedeagus; p – paramere).

on preparation this structure is irregular and hard to resolve). Of the inner apparatus (aedeagal complex) two important features are present and in accordance with the subgenus definition: parameres short, bent at angle of ca. 90°, divergent (this character is also stressed by ALEXANDER, 1919) and lateral apodemes situated close to basal ones.

***Trichocera (Trichocera) fattigiana* ALEXANDER, 1952; comb. nov.**

(Figs 2-10)

syn. *Trichocera fattigiana* ALEXANDER, 1952

syn. *Trichocera (Metatrachocera) fattigiana* ALEXANDER 1952: DAHL & ALEXANDER, 1976

**M a t e r i a l   e x a m i n e d.** 1 ♂, USA, Atlanta, GA, light trap, 14.xi.1980; 1 ♀, same locality, 27.xi. 1978 (all coll. H. D. Pratt; Brit. Mus. 1984-320; BMNH); 1 ♂, same data, ISEZ.

**D i a g n o s i s.** Male with gonocoxal bridge low, fused, but desclerotized medially; gonostyle almost straight, not transformed, with narrow mesal basal process (similar to that in *T. hiemalis*). Parameres very short, divergent, fused almost to level of aedeagus tip. Female with large, crescent-like ovipositor.

**A d d i t i o n a l   d e s c r i p t i o n.** Antennae with large, cylindrical f1, 3-4 times as long as pedicel and twice f2, covered with dense, long setae ("pubescence" according to STARÝ, 1998), without conspicuous, terminal bristles (Fig. 3). Tarsal claws large in male (ca. 1/2 the length of t5) and small in the female (less than 1/4 the length of t5). Wing (Figs 5, 8) clear, 6-6.5 mm long; R2+3+4 longer than R2+3, M1 and M2 short.

**Terminalia, male** (Figs 2, 4, 6, 7): the gonocoxal bridge is fused, but desclerotized medially; hence ALEXANDER (1952) and PRATT (1984) describe it as incomplete. Centrally the desclerotized mebrane forms a fold (Fig. 2) reminding the beak-like structure of *T. hiemalis* and *T. sakaguchii* (the fold is visible only when lit through). The inner margins of sclerotized areas are marked at both sides of the bridge by a bunch of few, short bristles (Figs 2, 4). Gonostyles simple, with small, sharp process basally, very similar to that in *T. hiemalis*. Aedeagal complex (Figs 6, 7): parameres very short, fused almost to the level of aedeagus tip; basal apodemes very short and poorly sclerotized; lateral apodemes declined to the base, expanded into an ear-like shape. Aedeagus large, protruding over the bridge; aedeagal apodeme very short and broad. The sternite IX with margin expanded (a condition visible in lateral view; Fig. 4), desclerotized, provided medially with a group of strong, long bristles reaching the bridge.

**Female** (Figs 8, 9, 10): ovipositor (Fig. 9) longer than the genital segment, regularly crescent, evenly narrowing to a sharp tip; dorsal basal margin forming a large angle with the base; setulose area not delimited by a suture. Genital plates (Fig. 10): hypogynial plate slightly pointed at the apex, with a large, oval opening; apodeme devoid of fork-like arms, with sharp lateral projections visible only when lit through and not shown in PRATT (1984). Supragenital plate ending broadly triangular, with two bristles; when lit through, the shape shown in Fig. 10. is revealed. Spermathecae with short ducts.

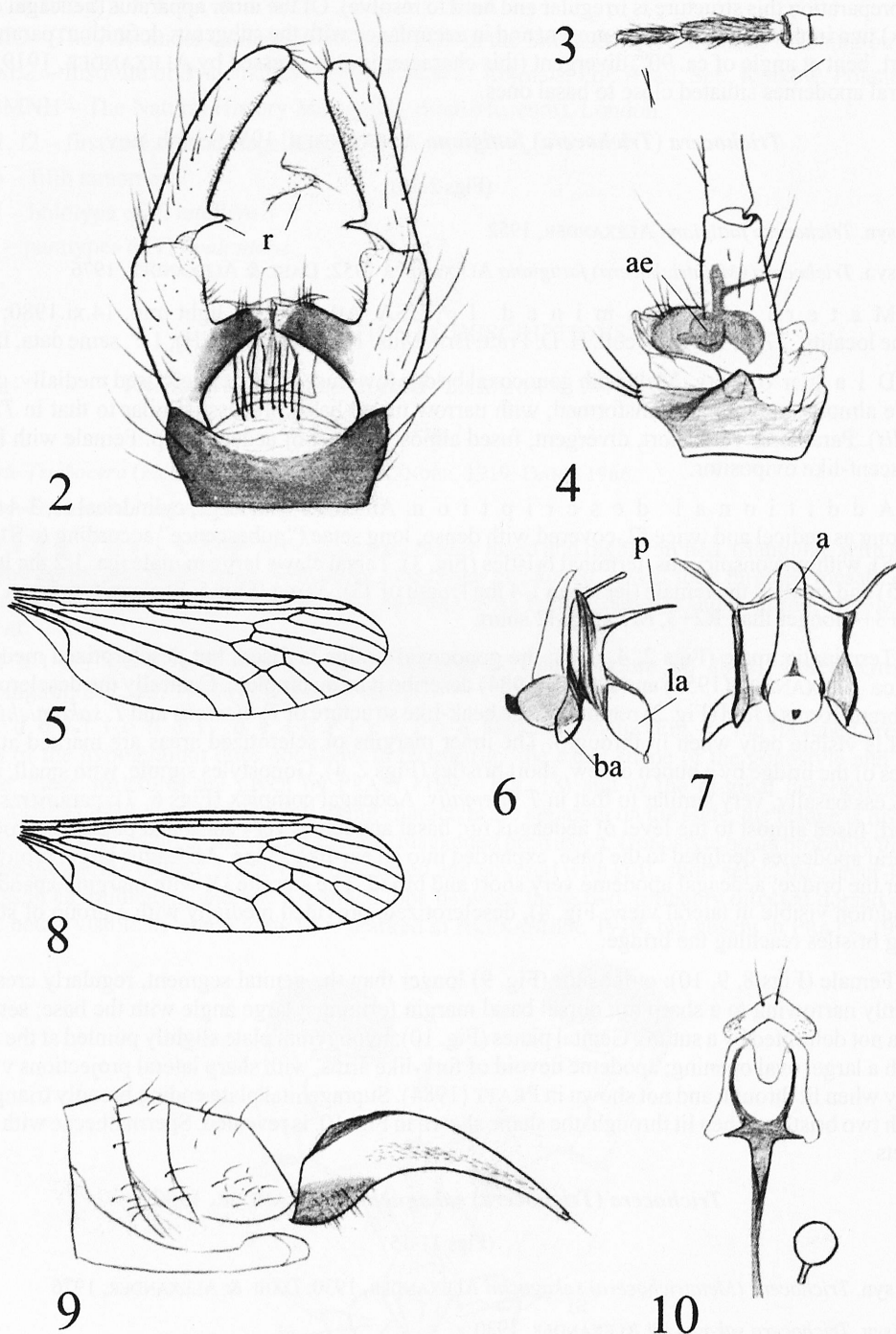
***Trichocera (Trichocera) sakaguchii* ALEXANDER, 1930**

(Figs 11-15)

syn. *Trichocera (Metatrachocera) sakaguchii* ALEXANDER, 1930: DAHL & ALEXANDER, 1976

syn. *Trichocera sakaguchii* ALEXANDER, 1930

**D i a g n o s i s.** Wings with brown spot on rm. Male: gonocoxites narrow; gonocoxal bridge fused, desclerotized medially; gonostyles with large, sharp process midway and apices tucked inwards. Parameres relatively long for a subgenus, fused to ca. 2/3 of aedeagus length, not divergent.



Figs 2-10. *Trichocera (Trichocera) fattigiana* ALEXANDER. 2-7 male: 2 – genitalia ventrally; 3 – first and second flagellomere; 4 – male genitalia laterally; 5 – wing; 6 – aedeagal complex laterally; 7 – same, ventrally. 8-10 female: 8 – wing; 9 – genitalia laterally; 10 – genital plates and spermatheca. (a – aedeagus, r – process of gonostyle; other abbreviations as in Fig. 1; scale bar = 0.2 mm, applicable to Figs 2 and 9).

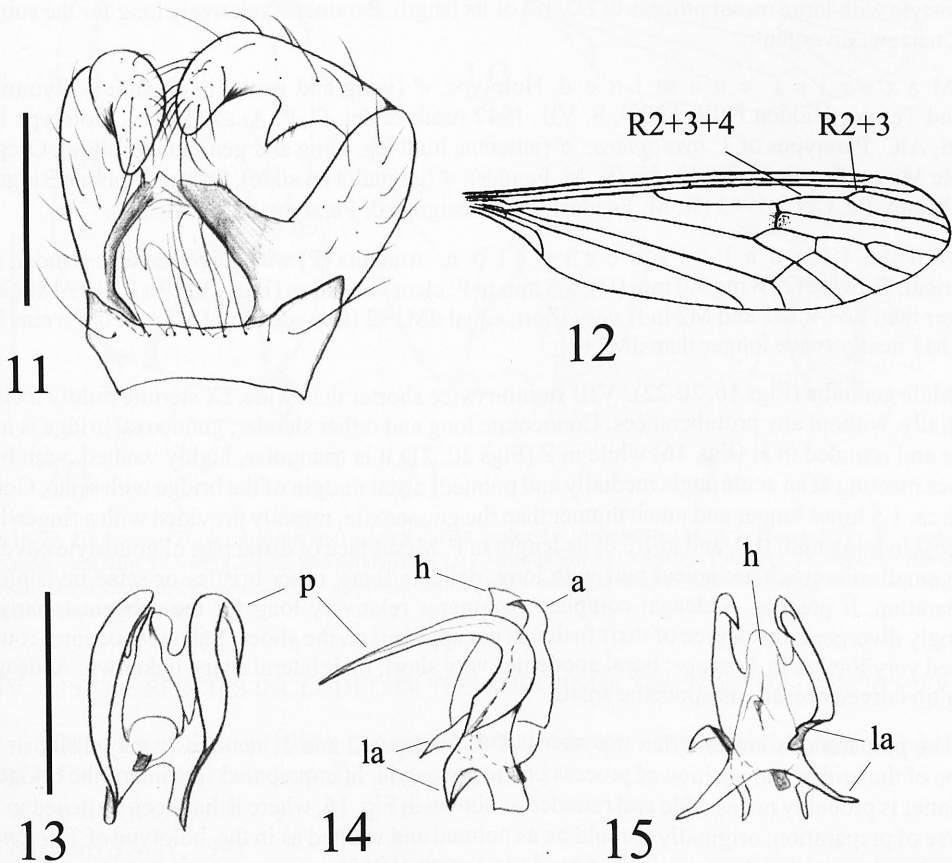


**Material examined.** India, Assam, Mishmi Hills, Delai Valley, Chanliang, 1♂, 25.xi. 1936. 4840 ft. M. Steele. BM 1937-324 (BMNH).

**Additional description.** Wing length 9.0 mm. Colour bright brown; wings pale brown infuscated, with single spot on rm. Antennae: f1 four times the length of pedicel and twice f2.

Wing (Fig. 12): Sc setated; venation in accordance with description of ALEXANDER (1930) and drawing by TOKUNAGA (1938), with R2+3+4 four times the length of R3+4, subsinuous R3, single spot on r-m and broad d cell.

**Terminalia.** Male (Figs 11, 13-15): sternite IX fairly broad, massive, without excision; distal margin set with powerful, long bristles reaching the lower margin of the bridge (a character visible only when lit through). Gonocoxites long and relatively narrow; the bridge similar to that in *T. hiemalis*, in being fused, but medially desclerotized, with central, small, beak-like projection of the membrane. Gonostyles with a powerful, sharp process at midlength; apices tucked to the inside, with strong bristles of both styles overlapping (Fig. 11). Aedeagal complex (Figs 13-15): aedeagus of the *hiemalis* group character, with relatively short parameres (but longer than in *T. hiemalis*), bent at the base and then straight, not divergent; their bases fused into a large hood over the aede-



Figs 11-15. *Trichocera (Trichocera) sakaguchii* ALEXANDER; male. 11 – genitalia lateroventrally; 12 – wing; 13 – aedeagal complex ventrally; 14 – same, laterally; 15 – same, dorsally. (h – hood; other abbreviations as in Figs 1 and 2 – 10; scale bar = 0.2 mm, not applicable to the wing).

gus; basal apodemes short; lateral apodemes small, bent to the base of aedeagus, and divided into two small, sharp lobes. Aedeagus with tip strongly curved to dorsal side and apodeme broad but short.

According to TOKUNAGA (1938), the female bears a long ovipositor.

**R e m a r k.** The species was known from Japan; the present record brings its distribution to the southern slopes of the Himalaya Mts.; in Japan the adults are often found on the undergrowth of the forest in November - January (TOKUNAGA 1938).

***Trichocera (Trichocera) tetonensis* ALEXANDER, 1945; comb. nov.**

(Figs 16-22)

syn. *Trichocera (Metatrachocera) tetonensis* ALEXANDER, 1945; DAHL & ALEXANDER, 1976

syn. *Trichocera hyaloptera* ALEXANDER, 1949

syn. *Trichocera tetonensis* ALEXANDER, 1945

**D i a g n o s i s.** Male with gonocoxal bridge fused, provided with a small, central beak; gonostyle with large mesal process in 1/3-1/2 of its length. Parameres relatively long for the subgenus, narrow, divergent.

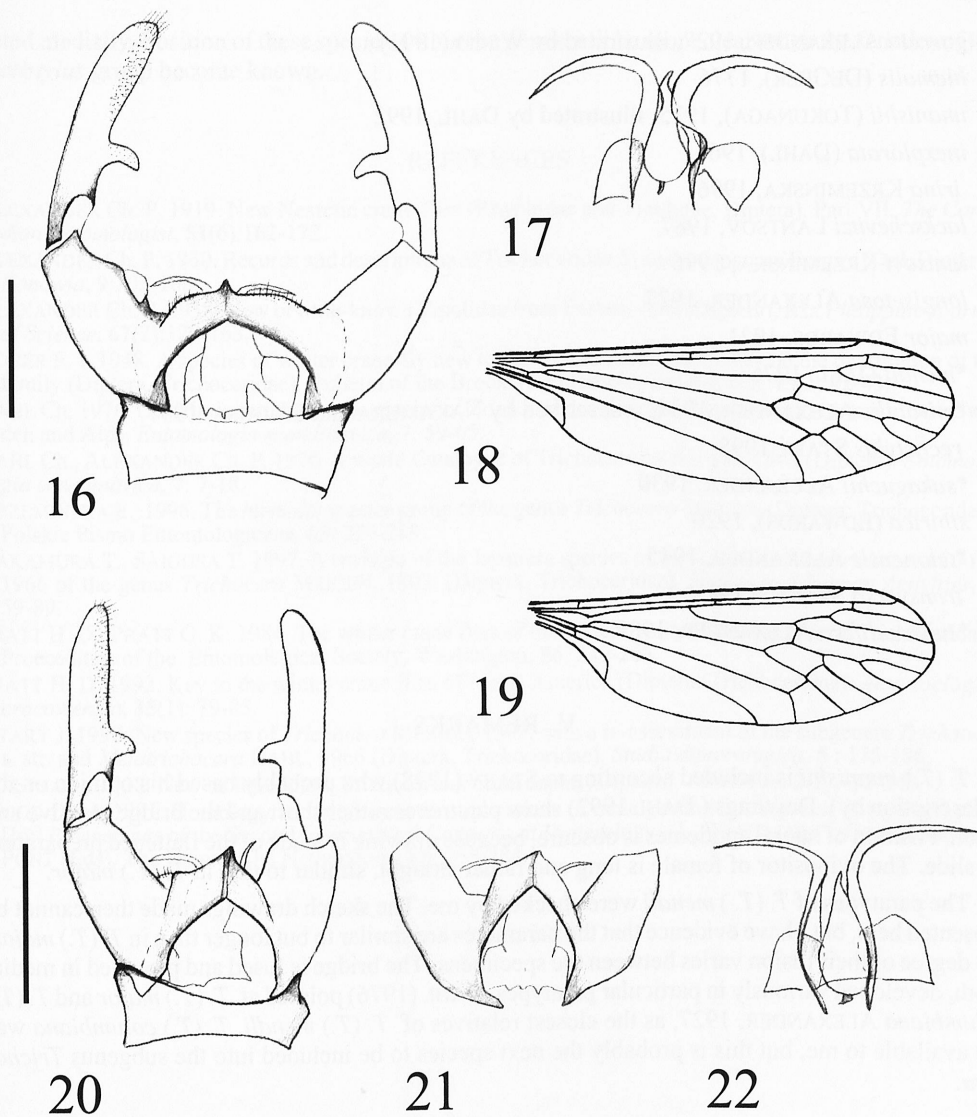
**M a t e r i a l e x a m i n e d.** Holotype, ♂ (wing and genitalia on slide), Wyoming, Grand Tetons, Hidden Falls, 6900', 8. VII. 1942 (coll. et det. C. P. ALEXANDER). Holotype No. 7506, AIC. Paratypes of *T. hyaloptera*: ♂ (antenna, hind leg, wing and genitalia on slide), Oregon nr Mc Minnville, - St.3- Oct.12. 45; (K. M. Fender); ♂ (genitalia on slide), Oregon Peavine Ridge nr Mc Minnville, Oct 2.1945 (K. M. Fender). Both designated: Paratype 8851; AIC.

**A d d i t i o n a l d e s c r i p t i o n.** Antenna (P) with flagellomeres slender, cylindrical; fl twice f2. Wing 7.0 mm (H), 5.5 mm in P; clear. Venation (Figs 18, 19): R2+3+4 slightly longer than R3+4; M1 and M2 in H very short, equal dM1+2 (free section of M1+2); in P veins M1 and M1 nearly twice longer than dM1+2.

Male genitalia (Figs 16, 20-22). VIII sternite twice shorter than wide. IX sternite mildly incised medially, without any protuberances. Gonocoxite long and rather slender; gonocoxal bridge is low, wide and rounded in H (Fig. 16) while in P (Figs 20, 21) it is triangular, highly vaulted, with both halves meeting at an acute angle medially and pointed; distal margin of the bridge with setae. Gonostyle ca. 1.5 times longer and much thinner than the gonocoxite, mesally provided with a finger-like process in midlength (H), and in 1/3 of its length in P. Mesal face of distal part of gonostyle covered with small microtrichiae; apical part with long, delicate setae; other bristles or setae invisible in preparation, if present. Aedeagal complex: parameres relatively long for the subgenus, narrow, strongly divergent; the degree of their fusion is not apparent on the slides. Lateral apodemes round, placed very low, as in *T. major*; basal apodemes very short; their lateral shape unknown. Aedeagus with tip curved dorsad; its apodeme small.

The preparations indicate that the males of *T. hyaloptera* and *T. tetonensis* may differ in the shape of the bridge and position of process on the gonostyle. In unprepared specimens the bridge of the latter is probably not as wide and rounded as shown in Fig. 16, where it has been flattened in the course of preparation; originally it could be as pointed and vaulted as in the holotype of *T. tetonensis* and such a similar shape is pictured by ALEXANDER (1945).

Whether these two types represent separate species, can be verified only after examining a larger sample of males, and the females, which remain unknown.



Figs 16-22. *Trichocera (Trichocera) tetonensis* ALEXANDER, males. 16-18: holotype; 16 - genitalia ventrally; 17 - aedeagal complex laterally; 18 - wing. 19-22: two paratypes of *T. (T.) hyaloptera* ALEXANDER, syn. *T. (T.) tetonensis* (data of the paratypes in the text): 19 - wing, 20, 21, - genitalia ventrally; 22 - aedeagal complex of the male (scale bar = 0.2 mm, not applicable to the wings).

#### IV. LIST OF SPECIES INCLUDED IN THE SUBGENUS *TRICHOCERA (TRICHOCERA)*

(updated list of STARÝ (1998); \* - species included herein on the basis of additional descriptions or literature data, as indicated)

*altipons* STARÝ, 1998

*basidens* STARÝ, 1998

\**bituberculata* ALEXANDER, 1924; illustrated by COHER, 1948; PRATT, 1984

\**colei* ALEXANDER, 1919

\**fattigiana* ALEXANDER, 1952

- garretti* ALEXANDER, 1927; illustrated by WOOD (1991)  
*hiemalis* (DEGEER), 1776  
*imanishii* (TOKUNAGA), 1935; illustrated by DAHL, 1992  
*inexplorata* (DAHL), 1967  
*irina* KRZEMIŃSKA, 1996  
*lackschevitzi* LANTSOV, 1987  
*lantsovi* KRZEMIŃSKA, 1996  
*longisetosa* ALEXANDER, 1927  
*major* EDWARDS, 1921  
*\*mendli* DAHL, 1976  
*\*mirabilis* ALEXANDER, 1934; redescribed by NAKAMURA and SAIGUSA, 1997.  
*rectistylus* STARÝ 1998  
*\*sakaguchii* ALEXANDER, 1930  
*sibirica* (EDWARDS), 1920  
*\*tetonensis* ALEXANDER, 1945  
*transversa* STARÝ, 1998  
*\*tuberculifera* ALEXANDER, 1938

## V. REMARKS

*T. (T.) imanishii* is included according to STARÝ (1998) who probably based his opinion on the redescription by). Drawings (DAHL 1992) show parameres rather short and the bridge massive and fused. Position of lateral apodemes is obscure, because drawing is made of the flattened preparation on slide. The ovipositor of female is long and rather straight, similar to that in *T. (T.) major*.

The paratypes of *T. (T.) mendli* were checked by me. The sketch drawings made then cannot be presented here, but I have evidence that the parameres are similar to but longer than in *T. (T.) major*; the degree of their fusion varies between the specimens. The bridge is fused and provided in medial tooth, developed variously in particular paratypes. DAHL (1976) pointed at *T. (T.) major* and *T. (T.) columbiana* ALEXANDER, 1927, as the closest relatives of *T. (T.) mendli*. *T. (T.) columbiana* was not available to me, but this is probably the next species to be included into the subgenus *Trichocera*.

## VI. DISCUSSION

Paradoxically, the better knowledge of male genitalia of species included presently into *Trichocera* (*Trichocera*) made apparent the isolated position of five species of the *rectistylus* group (*altipons*, *basidens*, *rectistylus*, *transversa*, all described by STARÝ, 1998). All remaining species from the list enclosed above share the following characters:

1. Parameres short, although not always fused; usually divergent.
2. Lateral apodemes of aedeagal complex declined to basal apodemes.
3. Gonocoxal bridge fused (even if partially desclerotised) and with central tooth.

The males of the *rectistylus* group share only the character of short parameres, which are however not as divergent as in most remaining species of the genus. Their lateral apodemes are shifted in quite an opposite direction to the parameres (which is a character met only in this group). The bridge is medially separated (even widely separated), i. e., the membrane covering it is delicate and invagi-



nated medially. Position of these species within the genus will be more clear when the females of the *rectistylus* group become known.

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