

Redescription of *Rhinocladius* Edwards (Diptera: Chironomidae: Orthoclaadiinae)

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Abstract

Diagnoses of male and female imagines of the genera *Rhinocladius* are given. *R. culicinus* known only as female imago is redescribed. *R. longirostris* is redescribed as male and female imagines. Parsimony analyses show that *Rhinocladius*, although keying to *Apometriocnemus* Sæther in Cranston et al. (1989), most likely belong in the *Pseudorthocladus* group of genera.

Key words: *Rhinocladius*, Orthoclaadiinae, Chironomidae, Argentina, Chile

Introduction

One of the more intriguing genera of chironomids is *Rhinocladius* Edwards described from Patagonia which has extremely elongated lamellae superficially resembling the proboscis of a mosquito. The labellae presumably may be used for sipping nectar. Söponis (1980) discovered an additional species with elongated labellae, but that species belonged to the genus *Pseudorthocladus* Goetghebuer. When one of us (T. A.) found a specimen belonging to *Rhinocladius* from Chile we found it opportune to redescribe the single species known as male, decide if the genus was a senior synonym of *Pseudorthocladus*, and, if not, give a generic diagnosis. Although the immatures are unknown the characteristic female combined with male features may help in a cladistic analysis.

Methods and terminology

The general terminology follows Sæther (1980). All material was on microscope slides and prepared in Canada balsam. The measurements are given as ranges followed by a mean (\bar{n}) when 4 or more specimens are measured. The holotype is returned to The Natural History Museum, London (BMNH).

For the cladistic analysis data were analysed under parsimony with PAUP 4.0b.8 on a Power Macintosh 8200/120.

***Rhinocladius* Edwards**

Rhinocladius Edwards 1931: 208.

Type species: Rhinocladius culicinus Edwards 1931: 271.

Other included species: Rhinocladius longirostris Edwards 1931: 270.

Diagnostic characters: The imagines are separable from all other chironomids by the presence of extremely long labellae combined with hairy wings and lack of pulvilli.

Male imago

Moderately small species, wing length about 1.4-1.6 mm.

Eye bare, rounded, no dorsomedian elongation. Antenna with 13 flagellomeres in male, 6 in female; male antenna fully plumed; groove beginning on flagellomere 3; sensilla chaetica present on flagellomeres 2, 3 and very numerous on 13; apex without straight apical seta; male AR around 1.0. Palpomeres strongly reduced; palpomeres 4 and 5 minute without setae; third palpomere of female with several median and 1 lateral spatulate sensilla clavata; fourth palpomere with few median and 1 lateral spatulate sensilla clavata; sensilla clavata apparently absent in male. Temporals consisting of inner and outer verticals and postorbitals. Tentorium especially long and narrow in female, stipes apparently normal. Cibarial pump broadest in middle, with concave anterior margin and well developed cornua. Clypeus with several setae. Labellae extremely elongate, half to more than 3/4 as long as wing, with short setae for full length, wider than length of second palpomere in female, more narrow in male.

Anteprenotal lobes broad, collar-like, not medially narrowed, with a few lateral setae. Acrostichals numerous, starting in front; anterior acrostichals long, posterior short; dorso-centrals irregularly biserial, numerous; several prealars; 1 supraalar present. Scutellum with transversely uniserial setae.

Wing broad, with well developed, projecting anal lobe; membrane with distinct punctuation and setae in apical half; costa strongly extended, reaches apex of wing; R_{4+5} ends distal to apex of M_{3+4} ; R_{2+3} runs and ends close to R_1 ; VR high; Cu_1 slightly sinuous; second anal vein well developed; postcubitus ending far distal to cubital fork; anal vein ending below cubital fork. Brachiolum with 2-3 setae, subcosta, M, RM and postcubitus bare in male, only subcosta and sometimes postcubitus bare in female. Squama with several setae. Setae numerous in cells r_{4+5} , m_{1+2} and m_{3+4} of both sexes; several in cell cu plus an in male with no setae on anal lobe, numerous also on anal lobe in cells cu plus an in female, no setae in cell m basal of RM in male, few in female. Sensilla campaniformia

about 8 basally and 8 apically on brachiolum, 3 below setae on brachiolum; 1 present basally on subcosta, 1 on RM and 1 basally on R_1 .

Front leg ratio 0.6-0.7. Front tibial spur straight; spurs of mid tibia short; hind tibia with well developed spurs; hind tibial comb consisting of numerous conspicuously long setae. Pseudospurs, sensilla chaeticae and pulvilli absent.

Tergites with basal, marginal, median and lateral setae in both sexes.

Anal point absent. Tergite IX of male with several; laterosternite IX with few setae. Transverse sternapodeme strongly convex, oral projections relatively weak. Phallapodeme and aedeagal lobe well developed. Virga consisting of single long spine apparently apically split with a lamella to each side. Gonocoxite well developed; superior volsella apparently absent; inferior volsella well developed. Gonostylus broadest about 1/3 from apex, crista dorsalis low and extending almost full length of gonostylus, megaseta normal.

Female genitalia with well developed gonocoxite with several short and a few long setae. Coxosternapodeme curved, connected basal of vagina. Tergite IX divided into two setigerous protrusions. Segment X normal. Postgenital plate triangular. Cercus of moderate size. Gonapophysis VIII divided into small, but broad-based dorsomedial lobe and large ventrolateral lobe connected with dorsomedial lobe. Apodeme of apodeme lobe straight and conspicuous. Seminal capsules of moderate size, smaller than cerci, ovoid, dark sclerotized, with long neck. Spermathecal ducts with weak curves, with distinct bulbs and joined for a short distance before common opening. Labia with fine microtrichiae.

Systematics

The genus keys to *Apometriocnemus* Sæther in Cranston et al (1989) except for the absence of dorsomedial eye extension. In Sæther et al. (1999) it keys to *Pseudorthocladus* (*Pseudorthocladus*) *pilosipennis* Brundin except for the lacking eye extension, and the absence of anal point and pulvilli. Significant similarities with *Apometriocnemus* (Sæther 1985) consist in hairy wings; strongly extended costa; sinuous Cu_1 ; and absence of pulvilli, sensilla chaeticae, pulvilli, and anal point. Significant similarities with some species of *Pseudorthocladus* Goetghebuer consist in the elongated labellae (as in *P. macrostoma* Sponis, 1980 fig.1), placement and shape of sensilla clavata on third and fourth palpomere of the female, hairy wing (as in *P. pilosipennis*), presence of supraalar, complete absence of anal point (as in some specimens of *P. filiformis* (Kieffer) (Sæther & Sublette 1983 fig. 33 E)), and virga about as in *P. macrostoma*, *P. macrovirgatus* and related species (Sæther & Sublette 1983). Superficially the male most resembles a *Pseudorthocladus*. The female, however, show similarities with *Botryocladus* Cranston et Edward (1999) in the coxosternapodeme, in gonapophysis VIII and in the spermathecal ducts of some species which have bulbs before common duct and opening. That genus, however, has undivided tergite IX as have all described species of the *Pseudorthocladus* group.

A phylogenetic analysis of the placement of the genus *Rhinocladius* in relation to some selected orthoclad genera is presented below.

***Rhinocladius culicinus* Edwards (Figs 1-8)**

Rhinocladius culicinus Edwards 1931: 271.

Material examined: CHILE: Terr. Rio Negro., L. Correntoso, holotype ♀: 18-25 xi 1926, F. & M. Edwards (BMNH1927-63); Llanquihue Prov., Casa Pangué, 3 ♀ paratypes, 4-10 xii 1926, F. & M. Edwards (BMNH1927-63). (According to Edwards, 1931, however, one of the paratypes is supposed to be from L. Correntoso.

Diagnostic characters: The imagines differ from the only other known species, *R. longirostris*, by having labellae 0.50-0.56 times as long as the wing, several setae on postcubitus, and fewer prealars.

Female imago (n=3-4 except when otherwise stated)

Total length 2.60-2.98 mm. Wing length 1.70-2.10, 1.88 mm long. Total length/wing length 1.51-1.60. Wing length/length of profemur 2.32-2.43. Thorax, head and legs dark brown; abdomen dark with posterior 1/4 more pale.

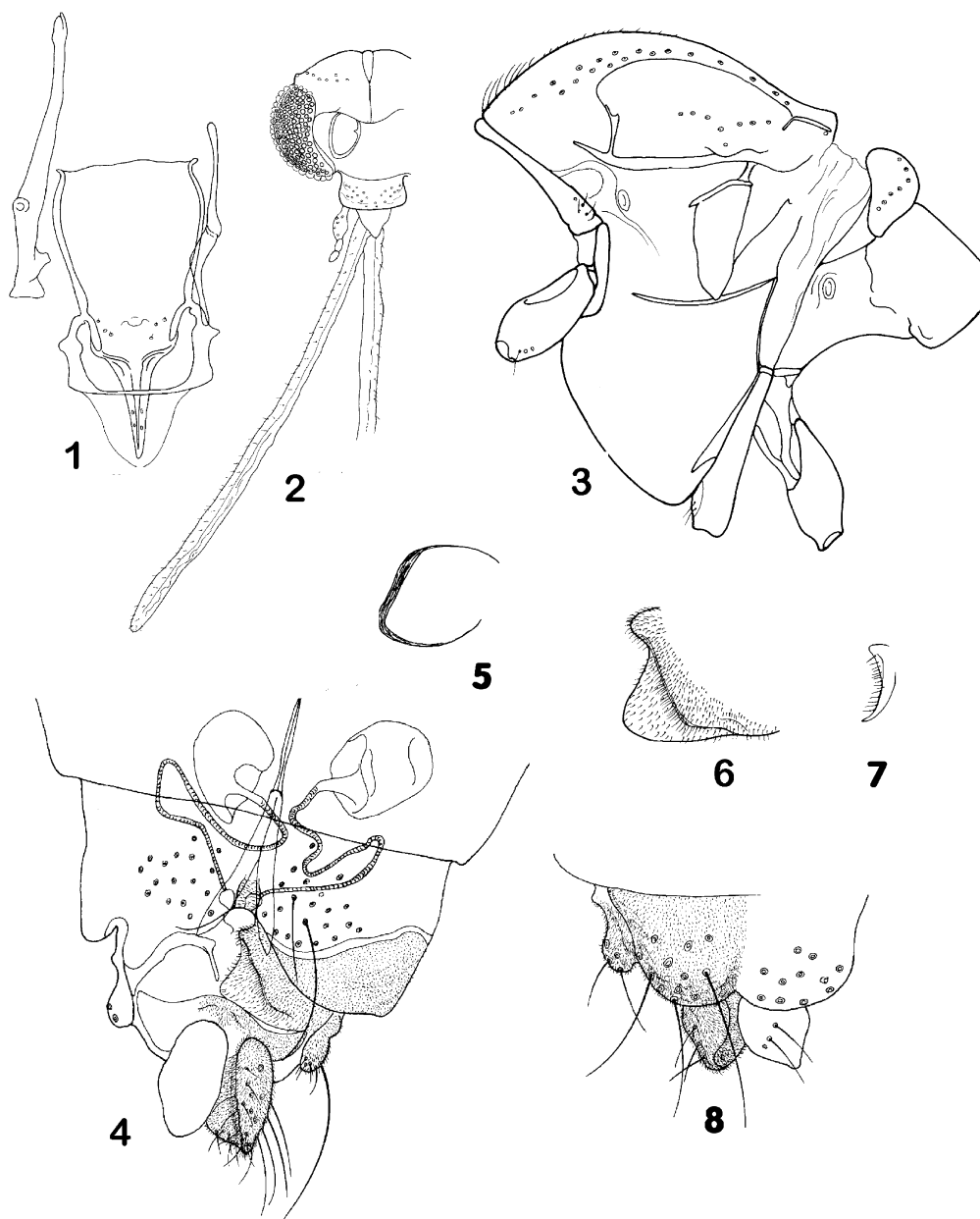
Head (Fig. 2). AR 0.42-0.44. Length of flagellomeres (in μm) as: 68-83, 77; 71-94, 84; 71-105; 71-98; 64-83; 154-188. Temporal setae 11-13, 12; consisting of 7-9, 8 inner verticals; 2-3, 2 outer verticals; and 2 postorbitals. Clypeus with 12-21 setae. Tentorium (Fig. 1) 173-210, 189 μm long: 19-24, 21 μm wide; stipes 83-131 μm long, 23-26 μm wide. Palpomere as in *R. longirostris* (Fig. 20), lengths (in μm): 11; 23-34, 28; 60-79, 71; 26-30, 29; 21-30, 25. Third palpomere with 16-24 (2) spatulate sensilla clavata, fourth palpomere with 3-4 (2) spatulate sensilla clavata. Labellae 869-1106 μm long, 41-58 μm wide, 0.50-0.56 times as long as wing.

Thorax (Fig. 3). Antepnotum with 4 lateral setae. Dorsocentrals 17-24, 21; acrostichals 14-18 (2); prealars 7-8, 8. Scutellum with 12-14, 14 setae.

Wing. VR 1.36-1.47, 1.42. Costal extension 143-169, 157 μm long. R with 22-40, 32 setae; R_1 with 33-55, 41; R_{4+5} with 49-94, 67; M with 16-25, 20; RM with 1-3, 2; M_{1+2} with 70-93, 83; M_{3+4} with 36-58, 44; Cu with 30-60, 41; Cu_1 with 19-32, 24; postcubitus with 8-22, 14; An with 27-46, 35; and costal extension with 16-20 non-marginal setae. Cell m with 1-12, 6 setae; r_{4+5} , m_{1+2} , and cu plus an each with about 250-300 setae; m_{3+4} with about 75-95 setae. Squama with 7-10, 8 setae

Legs. Spur of front tibia 34 μm (2) long; spurs of mid tibia 30 (1) and 23-26 μm long; spurs of hind tibia 83-94 and 23-30 μm (2) long. Width at apex of front to hind tibiae (in μm) as: 41-49; 41-49, 45; 53-56. Comb of 14-15 setae, shortest seta 34-38 μm long, longest seta 75-94 μm long. Lengths (in μm , n= 2-4) and proportions of legs:

	fe	ti	ta ₁	ta ₂	ta	ta ₄	ta ₅	LR	BV	SV	BR
p ₁	699-879	832-1002	567-690	331-369	213-236	99-123	66-76	0.67-0.69	2.96-3.09	2.70-2.81	2.8-3.3
p ₂	718-888,801	803-936,860	435-520	246-288	161-208	85-109	57-66	0.54-0.56	3.52-3.59	3.51-3.52	-
p ₃	784-907	945-1068	624-709	302-340	232-293	104-142	66-80	0.66	3.14-3.36	2.79 (1)	3.8 (1)



FIGURES 1-8. *Rhinocladius culicinus* Edwards, female imago, 1: cibarial pump, tentorium and stipes, 2: head, 3: thorax, 4: genitalia, ventral view, 5: apodeme lobe, 6: ventrolateral lobe, 7: dorsomesal lobe, 8: genitalia, dorsal view.

Abdomen. Number of setae on tergites I-VIII as: 44-50; 36-56; 46-55; 40-55; 36-58; 37-51, 44; 18-43, 32; 18-27, 23. Number of setae on sternites I-VIII as: 0; 2; 11-14; 21-25; 25-33; 30-50, 37; 25-41, 35; 34-41, 39 median and 6-8, 5 lateral.

Genitalia (Figs 4-8). Tergite IX with 22-32, 27 setae. Gonocoxite with 6 setae including 1 long. Notum 83-90, 86 μm long. Cercus 83-105, 93 μm long. Seminal capsule 83-90, 86 μm long; with 25-30 μm long neck; 60-79, 71 μm wide.

Remarks

R. culicinus is very similar to *R. longirostris* described below differing significantly only in the shorter labellae and the presence of setae on postcubitus. It thus is not unlikely that the species redescribed below represents only a form of *R. culicinus*.

***Rhinocladius longirostris* Edwards (Figs 9-21)**

Rhinocladius longirostris Edwards 1931: 270.

Material examined: CHILE: Llanquihue Prov., Casa Pangué, paratypes σ° ♀, 4-10 xii 1926, F. & M. Edwards (BMNH1927-68). XI region, Lago Atravesado, 30 km SW Coihaique, σ° , 14 i 1996, T. Andersen (ZMBN).

Diagnostic characters: The imagines differ from the only other known species, *R. culicinus*, by having nearly twice as long labellae. (See Edwards 1931 fig. 43.)

Male imago (n=2 except when otherwise stated)

Total length 2.53-2.77 mm. Wing length 1.46-1.60 mm long. Total length/wing length 1.73-1.74. Wing length/length of profemur 2.30-2.45. Thorax, head, abdomen and legs dark brown.

Head (Fig. 9). AR 0.96-1.09. Ultimate flagellomere 378-390 μm long. Temporal setae 11-12, consisting of 6 inner verticals, 3-4 outer verticals, and 2 postorbitals. Clypeus with 11-12 setae. Tentorium (Fig. 10) 165-173 μm long, 28-30 μm wide; stipes 113-124 μm long, 26-38 μm wide. Palpomere length (in μm): 9, 30, 45-53, 21-3, 19-26. Labellae 1153 μm (1) long, 26 μm (1) wide

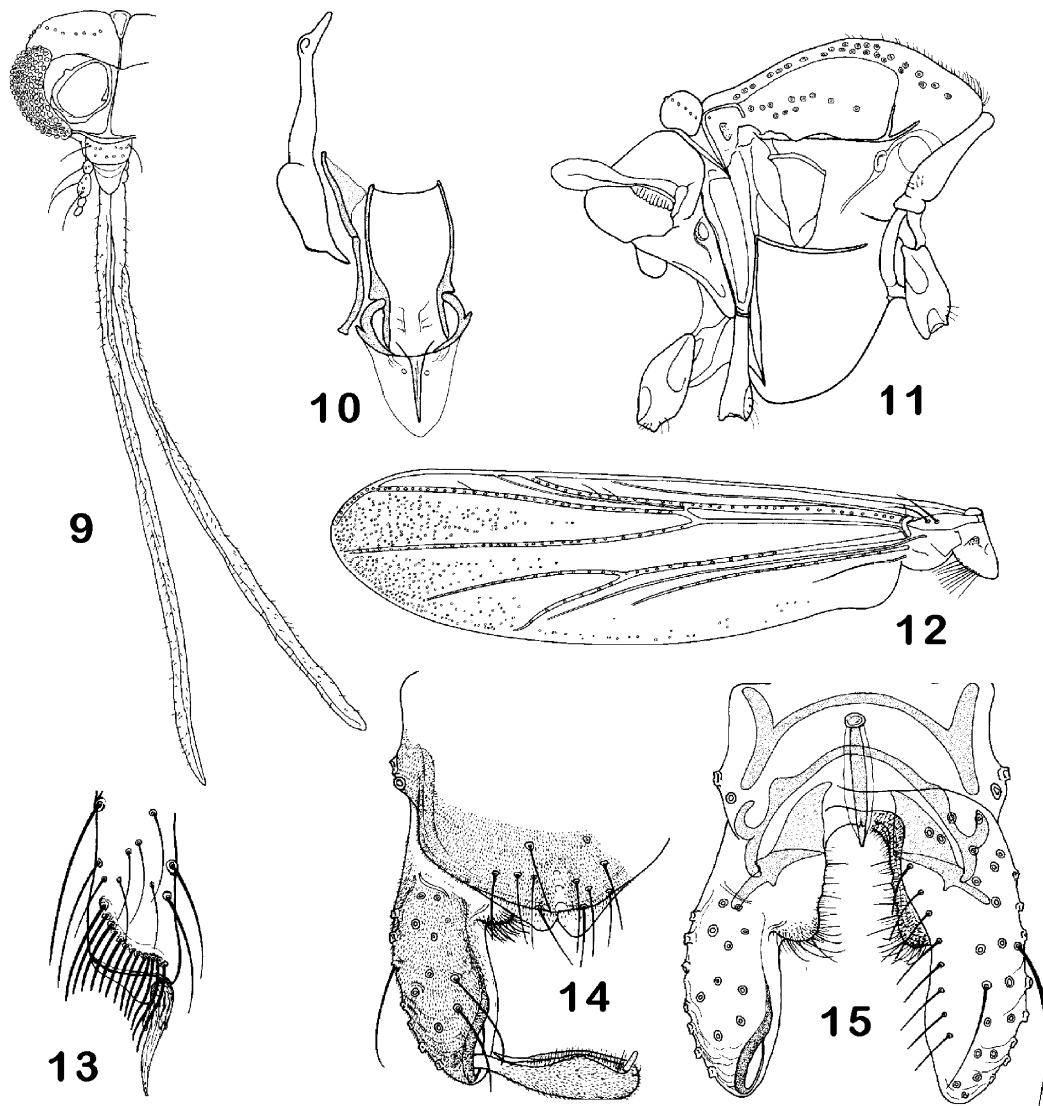
Thorax (Fig. 11). Anteprenotum with 4-6 lateral setae. Dorsocentrals 25-26, acrostichals about 20, prealars 10-13. Scutellum with 12 setae.

Wing (Fig. 12). VR 1.36-1.48. Costal extension 101-116 μm long. R with 20-26 setae, R_1 with 14-24, R_{4+5} with 30-32, M with 0-1, M_{1+2} with 31-37, M_{3+4} with 12-24, Cu with 10-12, Cu_1 with 6-11, An with 12-13, and costal extension with 8-12 non-marginal setae. Cell m bare; r_{4+5} with about 140-150 setae; m_{1+2} with about 160-170; m_{3+4} with 45-46; cu plus an with 25-30 setae, none on anal lobe. Squama with 9-11 setae

Legs. Spur of front tibia 58-60 μm long; spurs of mid tibia 21-26 and 11 μm long; spurs of hind tibia 68-75 and 19-21 μm long. Width at apex of front to hind tibiae (in μm)

as: 34-36, 38, 45-49. Comb (Fig. 13) of 13-14 setae, shortest seta 26-30 μm long, longest seta 56-94 μm long. Length (in μm) and proportions of the legs:

	fe	ti	ta ₁	ta ₂	ta	ta ₄	ta ₅	LR	BV	SV	BR
p ₁	633-652	704-775	435-463	293-321	208-217	113-118	57	0.60-0.62	2.62-2.76	3.08	2.2 (1)
p ₂	605-662	633-709	359-387	142	142	76	47-57	0.55-0.57	3.45-3.61	3.45-3.5	3.0 (1)
p ₃	666-732	761-841	482-548	104-109	104-109	104-109	61-71	0.63-0.65	2.95-3.08	2.87-2.96	5.0-5.3



FIGURES 9-15. *Rhinocladus longirostris* Edwards, male imago, 9: head, 10: cibarial pump, tentorium and stipes, 11: thorax, 12: wing, 13: tibial comb, 14: hypopygium, dorsal view, 15: hypopygium, ventral view and apodemes.

Hypopygium (Figs 14, 15). Tergite IX with 11-23 setae, laterosternite IX with 3-4 setae. Phallapodeme 75-79 μm long, transverse sternapodeme 75-83 μm long. Virga 64-68 μm long. Gonocoxite 150-169 μm long, inferior volsella well developed; gonostylus 86-88 μm long, megaseta 9-11 μm long. HR 1.74-1.91, HV 2.953.15.

Female imago (n=1)

Total length 2.74 mm. Wing length 1.58 mm long. Total length/wing length 1.74. Wing length/length of profemur 2.39. Thorax, head and legs dark brown; abdomen dark with posterior 1/4 more pale.

Head (Fig. 16). AR 0.45. Length of flagellomeres (in μm) as: 64, 68, 68, 75, 71, 146. Temporal setae 11, consisting of 6 inner verticals, 3 outer verticals, and 2 postorbitals. Clypeus with 10 setae. Tentorium (Fig. 18) 139 μm long, 13 μm wide; stipes (Fig. 17) 105 μm long, 30 μm wide. Palpomere (Fig. 20) lengths (in μm): 11, 30, 56, 26, 23. Third palpomere with 10 median and 1 lateral spatulate sensilla clavata, fourth palpomere with 2 median and 1 lateral spatulate sensilla clavata. Labellae 1361 μm long, 38 μm wide, 0.86 times as long as wing.

Thorax. Antepnotum with 5 lateral setae. Dorsocentrals 27, acrostichals 21, prealars 12. Scutellum with 12 setae.

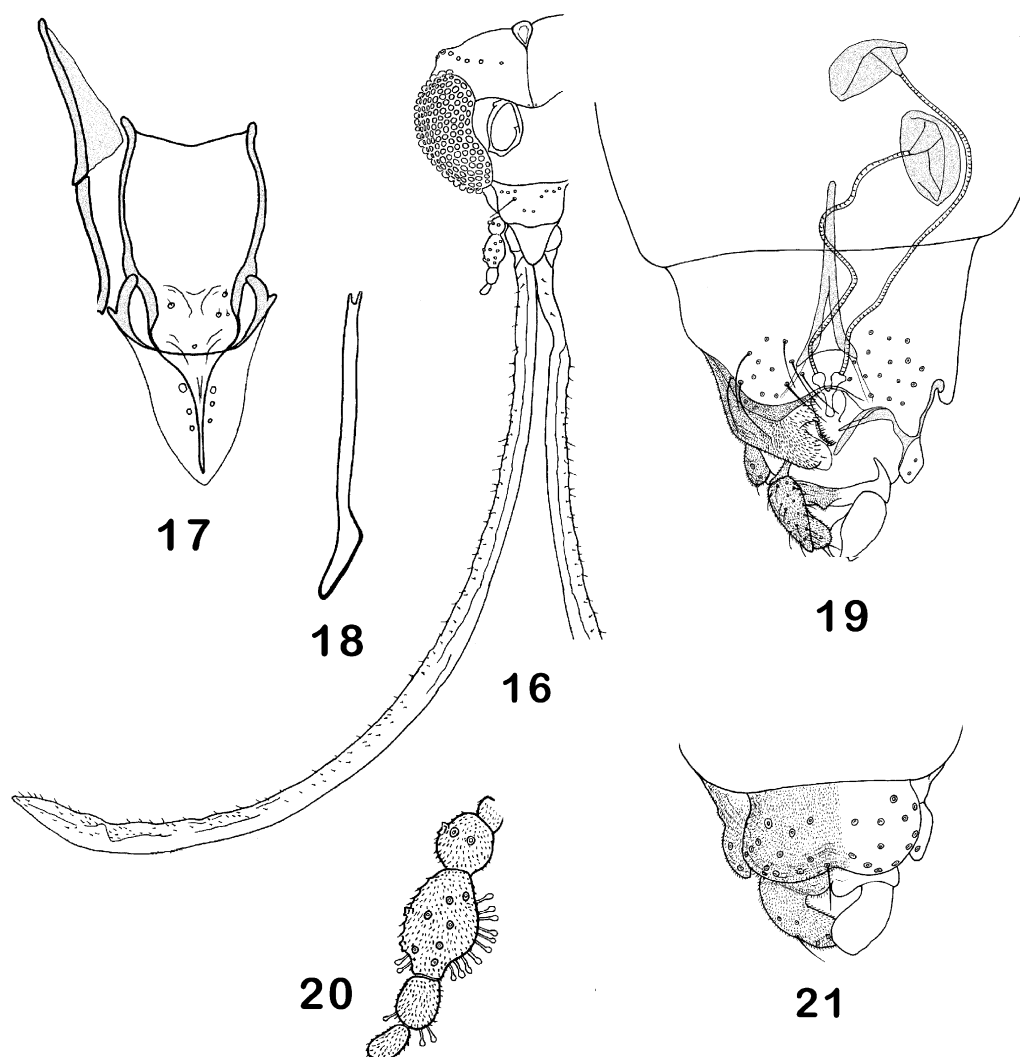
Wing. VR 1.44. Costal extension 131 μm long. R with 22 setae, R_1 with 32, R_{4+5} with 70, M with 17, RM with 2, M_{1+2} with 77, M_{3+4} with 28, Cu with 22, Cu_1 with 18, An with 31, and costal extension with 16 non-marginal setae. Cell m with 4 setae; r_{4+5} with about 220 setae; m_{1+2} with about 250; m_{3+4} with about 125; cu plus an with about 230 setae, including about 30 on anal lobe. Squama with 7 setae.

Legs. Spur of front tibia 26 μm long; spurs of mid tibia 26 and 23 μm long; spurs of hind tibia 71 and 21 μm long. Width at apex of front to hind tibiae (in μm) as: 38, 43, 56. Comb of 14 setae, shortest seta 34 μm long, longest seta 71 μm long. Lengths (in μm) and proportions of legs:

	fe	ti	ta ₁	ta ₂	ta	ta ₄	ta ₅	LR	BV	SV	BR
p ₁	662	784	491	293	198	104	66	0.63	3.93	2.94	3.2
p ₂	652	709	397	217	142	123	66	0.56	3.21	3.43	2.7
p ₃	699	850	572	265	227	95	66	0.67	3.25	2.73	3.0

Abdomen. Number of setae on tergites II-VIII as: 56, 55, 49, 47, 32, 32, 22. Number of setae on sternites I-VIII as: 0, 2, 11, 26, 35, 36, 40, 30.

Genitalia (Figs 19, 21). Tergite IX with 24 setae. Gonocoxite with 2 long and 8 short setae. Notum 146 μm long. Cercus 83 μm long. Dorsomesal, ventrolateral and apodeme lobes as in *R. culicinus*. Seminal capsule about 85 μm long, with 26 μm long neck; about 68 μm wide. Bulbs before common part of spermathecal ducts 15 μm wide, 11 μm long.



FIGURES 16-21. *Rhinocladius longirostris* Edwards, female imago, 16: head, 17: cibarial pump and stipes, 18: tentorium, 19: genitalia, ventral view, 20: palp, 21: genitalia, ventral view.

Phylogenetic analysis

A generic-level analysis based on the characters presented in Table 1 and the data matrix in Table 2 with *Diplocladius* Kieffer, *Propillocerus* Kieffer and *Brillia* Kieffer combined as outgroup was performed. Analyses were done with characters 31, 34, 110, 120 ordered. When no characters were given weight 14 trees were obtained each with a length of 552 steps, consistency index (CI) of 0.30, retention index (RI) of 0.48 and rescaled consistency index (RC) of 0.14 (Fig. 22). Bootstrap values were 91 % for the *Pseudorthocladius* group not including *Rhinocladius*, and 69-77 % for *Rheocricotopus* plus *Psectrocladius*, *Ortho-*

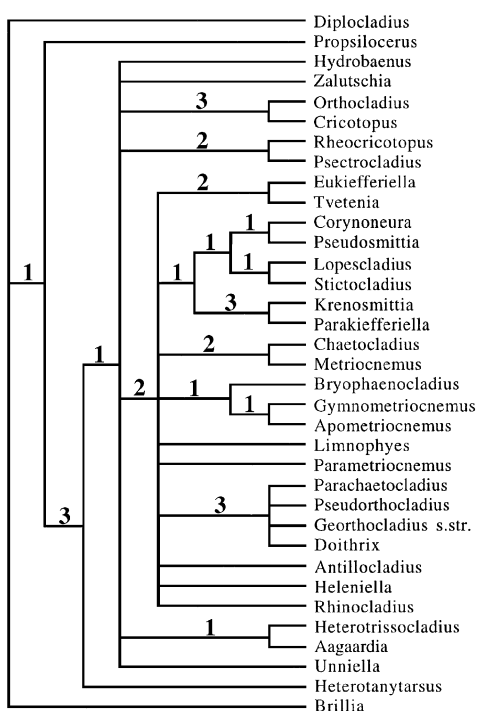
cladius plus *Cricotopus*, *Krenosmittia* plus *Parakiefferiella* and *Lopescladius* plus *Stictocladius*. When the results were reweighted according to RC a single tree with 555 steps after reset to equal weights, CI 0.38, RI 0.63 and RC 0.24 was obtained (Fig. 23). Bootstrap values for this tree were 89-96 % for the *Pseudorthocladius* group not including *Rhinocladius*, *Rheocricotopus* plus *Psectrocladius*, *Orthocladius* plus *Cricotopus*, *Eukiefferiella* plus *Tvetenia*; and *Lopescladius* plus *Stictocladius*; lower than 80 % for other groupings. Bremer supports are given above each branch. When the characters are reweighted or weighted the Bremer support values given are those obtained when characters are reset to equal weights. That means that the Bremer support for some branches may be zero and even negative.

However, some placements of some genera such as *Corynoneura* as sister genus to *Pseudosmittia*, and *Rhinocladius* as sister genus to *Chaetocladius* plus *Metriocnemus* with *Parametriocnemus* and *Heleniella* in the same group are very unlikely. In fact preliminary parsimony analyses of a wider range of genera have shown that the *Corynoneura* group of genera belong with *Eukiefferiella* and related genera, and that *Heleniella* probably is related to *Stictocladius* and *Lopescladius*.

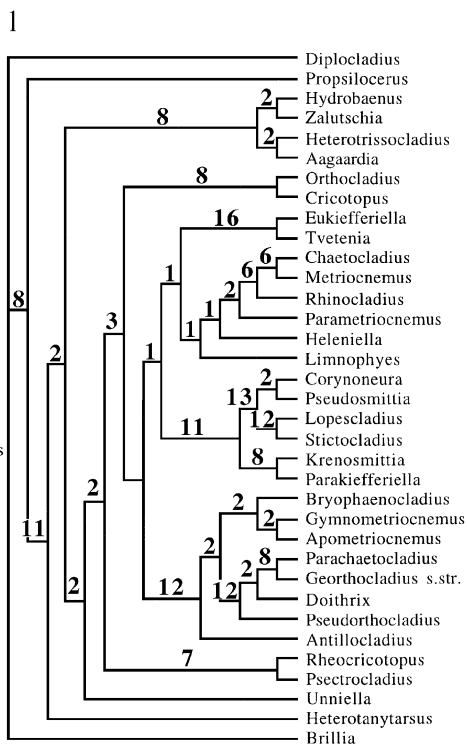
Several characters obviously are more important than others and should be weighted accordingly. Such weighting is rather subjective. However, with experience from related groups and genera and giving weight to characters found important as synapomorphies in other studies characters 6, 8, 43, 44, 50, 64, 65, 66, 77, 85, 89, 90, 91, 92, 93, 102, 106, 113, 117, 120, 125, 130 and 131 were given a weight of 10, characters 3, 5, 15, 18, 19, 24, 26, 31, 35, 45, 46, 47, 55, 61, 79, 84, 86, 94, 95, 97, 99, 105, 110, 111, 118, 119, 129 and 132 a weight of 5. The resulting single tree obtained (Fig. 24) had 587 steps after reset to equal weights, a CI of 0.36, RI of 0.57 and RC of 0.20. Reweighting according to RC resulted in a single tree of 580 steps after reset to equal weights, CI 0.42, RI 0.66 and RC 0.28 (Fig. 25). Only the bootstrap values for *Rheocricotopus* plus *Psectrocladius* (86 %) were higher than 76 % before reweighting, while after reweighting according to RC the bootstrap values were 96 % for *Rheocricotopus* plus *Psectrocladius*, 87 % for the *Pseudorthocladius* group not including *Rhinocladius* and 75 % including *Rhinocladius*, 97 % for *Lopescladius* plus *Stictocladius*, 87 % for *Orthocladius* plus *Cricotopus*, 91 % for *Eukiefferiella* plus *Tvetenia*, and 90 % for *Corynoneura* plus *Eukiefferiella* and *Tvetenia*. The cladograms obtained with characters weighted are more in accordance with results from other analyses involving orthoclad genera than the unweighted cladograms.

FIGURES 22-25. Parsimony analyses of the relationships between *Rhinocladius* Edwards and some selected Orthoclaadiinae: 22: strict consensus tree of the 14 trees obtained with no characters weighted, 23: the single tree (right) obtained with characters reweighted according to the rescaled consistency index (RC), 24: the single tree obtained with some characters weighted, 25: the single tree obtained when the result reweighted according to RC. – Bremer supports are given above each branch, reset to equal weights when weighted or reweighted.

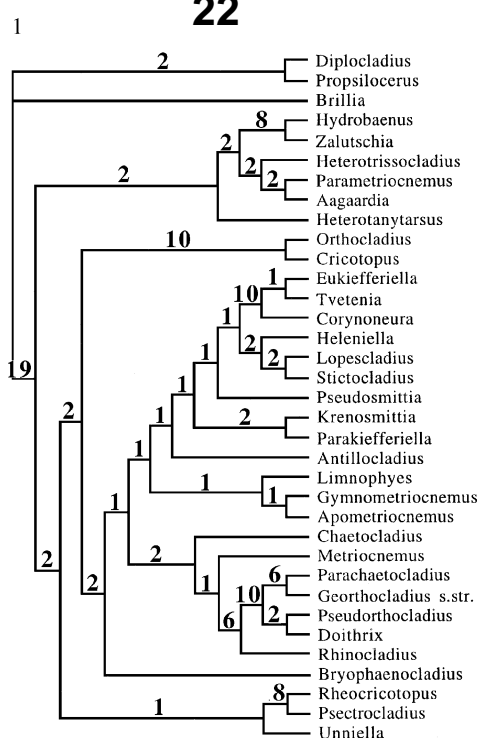
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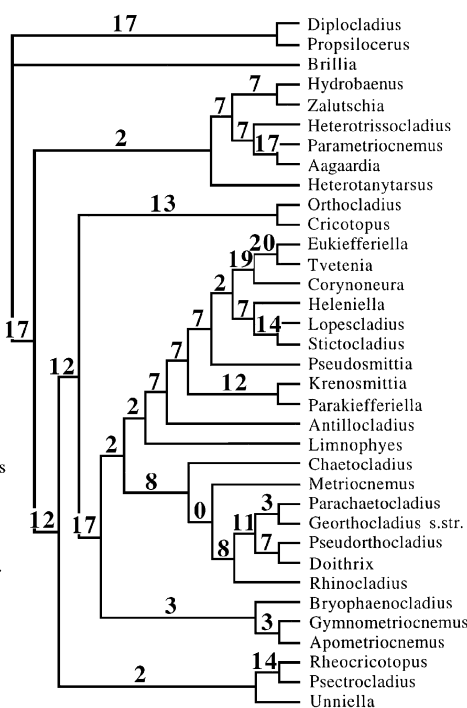
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The results show that *Rhinocladius* most likely belongs in the *Pseudorthocladius* group of genera. The similarities with *Apometriocnemus* are not supported by any parsimony analyses.

Acknowledgement

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TABLE 1. Characters and states used in the phylogenetic analyses. For some characters polymorphies are scored as apomorphies as they otherwise would be uninformative or appear constant.**Imagines**

- 1 *Antennal ratio*: (0) sometimes higher than 0.9 and always higher than 0.45; (1) sometimes lower than 0.46 and always lower than 0.9.
- 2 *Number of flagellomeres*: (0) always 13; (1) sometimes fewer.
- 3 *Male antennal apex*: (0) without subapical seta; (1) with.
- 4 *Female antennal apex*: (0) without subapical seta; (1) with.
- 5 *Eyes*: (0) bare, at most partly pubescent; (1) hairy or pubescent.
- 6 *Labellae*: (0) normal; (1) at least extremely elongate in one species. In *Pseudorthocladius* only *P. macrostomus* Sopenis has elongate labellae. However, the genus is scored as synapomorphous for the character since the character otherwise would be autapomorphous for *Rhinocladius* only and thus uninformative.
- 7 *Palpomeres*: (0) always 5 palpomeres of normal length; (1) at least sometimes 4 or less palpomeres or palpomeres strongly reduced in length.
- 8 *Sensilla clavata of palpomeres*: (0) palpomere 3 at most with few sensilla in one group, palpomere 4 without sensilla; (1) at least female with sensilla in more than one group on palpomere 3 and palpomere 4 usually also with at least sensilla clavata, or, in *Prodiamesa* and *Chaetocladus*, numerous sensilla clavata at well developed sensillum coeloconicum.
- 9 *Dorsomedian eye elongation*: (0) moderately to well developed; (1) absent or very weak.
- 10 *Temporals*: (0) inner verticals present or replaced by frontals, usually more outer verticals; (1) inner verticals absent, outer verticals usually few.
- 11 *Tentorium*: (0) male tentorium normal (less than 7 times as long as wide); (1) at least sometimes female like (more than 7 times as long as wide).
- 12 *Anteprenotal lobes*: (0) broad, collar like, at most slightly narrowed medially; (1) distinctly narrowed medially.
- 13 *Dorsal anteprenotals*: (0) absent; (1) present.
- 14 *Humeral pit*: (0) inconspicuous; (1) consisting of several smaller areas; (2) conspicuous, oval.
- 15 *Dorsocentrals*: (0) uniserial anterior; (1) bi- multiserial anterior.
- 16 *Dorsocentrals*: (0) uniserial posterior; (1) bi- multiserial posterior.
- 17 *Acrostichals*: (0) moderately long to long and strong at least in front (1) short, or absent.
- 18 *Acrostichals*: (0) starting in front; (1) starting some distance from anteprenotum; (2) in centre of scutum. (Absence scored as (?))
- 19 *Acrostichals*: (0) simple or absent; (1) often scalpellate.
- 20 *Prealars*: (0) 1-5; (1) 6 or more.
- 21 *Supraalar(s)*: (0) present; (1) absent.
- 22 *Setae of preepisternum and/or anepisternum*: (0) absent; (1) present.
- 23 *Scutellars*: (0) uniserial; (1) bi- multiserial.
- 24 *Postnotum*: (0) bare; (1) sometimes with setae.
- 25 *Wing spots*: (0) absent; (1) sometimes present.
- 26 *Wing membrane*: (0) with setae; (1) bare.
- 27 *Wing membrane*: (0) not to moderately punctated; (1) coarsely punctated.
- 28 *Anal lobe*: (0) relatively well developed, often protruding; (1) weak, reduced or cuneiform wing.
- 29 *Costa*: (0) distinctly extended; (1) moderately to not extended.
- 30 R_{4+5} : (0) ends above or distal to apex of M_{3+4} ; (1) ends proximal to apex of M_{3+4} .
- 31 Cu_1 : (0) not sinuous; (1) slightly sinuous; (2) strongly sinuous.
- 32 VR : (0) < 1.06 ; (1) $1.06-1.40$; (2) > 1.40 .
- 33 *Anal veins*: (0) An_1 extending well beyond cubital fork and An_2 conspicuous; (1) anal veins shorter.
- 34 *R veins*: (0) setae present on R, R_1 and usually R_{4+5} in both sexes; (1) setae present on R, absent on R_1 and often R_{4+5} of male, at most absent on R_1 in female; (2) setae absent on R of male, present in female; (3) setae absent on R and R_1 of both sexes, at most 1 apical seta on R_{4+5} .
- 35 *Squama*: (0) with setae; (1) bare.
- 36 *Leg ratio of male (LR_1)*: (0) sometimes higher than 0.8, and at least higher than 0.5; (1) 0.5-0.8; (2) sometimes lower than 0.5 and at least lower than 0.8.

- 37 *Tibial spurs*: (0) with distinct lateral denticles; (1) denticles indistinct or absent.
- 38 *Inner tibial spur of hind leg*: (0) At least 1/2 as long as outer spur; (1) shorter; (2) absent with also second spur of mid leg absent.
- 39 *Hind tibial comb*: (0) well developed, occupying full width of tibia; (1) weak or absent.
- 40 *Hind tibial comb*: (0) with less than 13 setae; (1) conspicuous with 13 or more setae of which some about as long as longest spur.
- 41 *Pseudospurs*: (0) present; (1) absent.
- 42 *Sensilla chaeticae of tarsi*: (0) present; (1) absent.
- 43 *Pulvilli*: (0) present and distinct; (1) absent or vestigial, less than 1/2 claw length.
- 44 *Anal point*: (0) absent; (1) small and anterior on tergite; (2) represented by hump-like extension of tergite or if absent represented by some stronger median setae; (3) well set off and posterior on tergite.
- 45 *Anal point*: (0) not with spatulate microtrichiae-free apex; (1) often with small or large spatulate, microtrichiae-free apex.
- 46 *Anal point*: (0) not very broad and rounded to bluntly triangular; (1) conspicuously broad and rounded to bluntly triangular.
- 47 *Setae on anal point or posterior on tergite IX*: (0) conspicuous, bristle-like to lamellate; (1) moderately developed; (2) short, weak or absent.
- 48 *Superior volsella*: (0) present; (1) absent.
- 49 *Superior volsella*: (0) absent or with setae and/or microtrichiae, not plate-like; (1) bare and plate-like.
- 50 *Gonostylus*: (0) simple; (1) double.
- 51 *Heel of gonostylus*: (0) absent; (1) present.
- 52 *Transverse sternapodeme*: (0) convex; (1) straight or concave; (2) absent, sternapodeme triangular.
- 53 *Oral projections of transverse sternapodeme*: (0) strongly developed; (1) weak to moderately developed; (2) absent.
- 54 *Crista dorsalis*: (0) evident, triangular or rounded preapical; (1) elongate, low; (2) not evident/weak.
- 55 *Megaseta*: (0) present; (1) absent.
- 56 *Virga*: (0) consisting of tight cluster of at least 6 spines or two groups of very strong spines; (1) virga not consisting of cluster or groups of spines.
- 57 *Virga*: (0) not consisting of narrow or broad field of scattered spinules; (1) consisting of narrow or broad field of scattered spinules.
- 58 *Virga*: (0) virga when present consisting of cluster or field of spines or few spines with lateral lamellae; (1) consisting of 1-5 short partly fused, sometimes plate-like spines without distinct lateral lamellae;
- 59 *Virga*: (0) virga when present consisting of cluster or field of spines or few spines without lateral lamellae; (1) consisting of 1-3 long, median, usually fused spines and distinct lateral lamellae.
- 60 *Gonocoxapodeme*: (0) absent, short and straight or evenly curved and ending at base of gonapophysis; (1) continuing basal of vagina or at least past base of gonapophysis.
- 61 *Female tergite IX*: (0) undivided; (1) divided by caudal concavity or notch; (2) divided into two setigerous protrusions.
- 62 *Female gonocoxite IX*: (0) large, projecting; (1) moderately developed to reduced.
- 63 *Female gonocoxite IX*: (0) with long setae only; (1) with some long and some short setae; (2) with short setae only.
- 64 *Gonapophysis VIII*: (0) undivided; (1) divided with ventrolateral lobe much smaller and more or less brush-like; (2) divided, with lobes of about same size; (3) divided with dorsomesal lobe smaller and with anterior rounded projection; (4) divided with dorsomesal lobe narrow, often line-like.
- 65 *Apodeme lobe*: (0) not apparent; (1) well developed, but not meeting at mid line and with microtrichiae; (2) meeting at mid line and/or with microtrichiae or fully sclerotized.
- 66 *Number of seminal capsules*: (0) 3; (1) 2.
- 67 *Seminal capsules*: (0) spherical to ovoid, small or of normal size; (1) large, spherical to elongate ovoid.
- 68 *Seminal capsules*: (0) at least partly coloured; (1) often completely pale. Polymorphies are scored as synapomorphies as no genera have all included species with pale capsules and the character otherwise would be uninformative.
- 69 *Opening of spermathecal ducts*: (0) separate; (1) common.
- 70 *Spermathecal ducts*: (0) not fused; (1) partly fused ducts before common opening.
- 71 *Bulbs of spermathecal ducts*: (0) absent; (1) present.
- 72 *Spermathecal ducts*: (0) straight; (1) with bend or loop.

Pupa

- 73 *Frontal apotome*: (0) without warts or tubercles; (1) with warts or tubercles.
- 74 *Frontal setae*: (0) present; (1) absent.
- 75 *Thoracic horn*: (0) present; (1) absent.
- 76 *Thoracic horn*: (0) not rounded to ovoid; (1) mostly rounded to elongate ovoid. - Polymorphies are scored as synapomorphies as only *Botryocladius* have all included species with rounded thoracic horn and the character otherwise would be uninformative.
- 77 *Thoracic horn*: (0) not with bulbous base and narrow apical portion; (1) with. *Eukiefferiella* is scored as (1) since most species have a thoracic horn with bulbous base and species without thoracic horn apparently has this secondarily reduced.
- 78 *Thorax*: (0) mostly smooth to wrinkled; (1) mostly tuberculose or spinulose
- 79 *Wing sheath*: (0) without pearls; (1) with.
- 80 *Dorsocentrals*: (0) anterior 2 and posterior 2(3) paired, anterior 3 grouped, all in row or 2-3 dorsocentrals only; (1) posterior 3 grouped or all 4 together.
- 81 *Tergites II-VIII*: (0) without posterior spine, or tubercle row(s), but may have caudal hooklets; (1) some with spines or tubercles.
- 82 *Median field of tergite IV*: (0) without discrete spine patch(es) or row(s); (1) with.
- 83 *Tergite I*: (0) without posterior spine row(s); (1) sometimes with.
- 84 *Sternites II-VII*: (0) without posterior spine row(s), but may have caudal hooklets; (1) some with spines or tubercles.
- 85 *Sternites or sternal conjunctives*: (0) without caudal hooklets; (1) sometimes with.
- 86 *Male sternite VIII*: (0) without posterior spine or tubercle row(s); (1) with.
- 87 *Sternite II or II and III*: (0) without anterior spine group; (1) sometimes with.
- 88 *Tergites and sternites*: (0) with single or no posterior row of spines; (1) at least some with double to multiple row of spines.
- 89 *Tergite III*: (0) without caudal hooklets; (1) with minute or conspicuous caudal hooklets.
- *Cricotopus absurdus* type without thoracic horn and with pearl row, another type with hooklets on T III and PSB on II and III.
- 90 *Tergite IV*: (0) without caudal hooklets; (1) with caudal hooklets.
- 91 *Tergite V*: (0) without caudal hooklets, although rows of conjunctival spinules may be hook-like anteriorly directed; (1) with minute or conspicuous caudal hooklets.
- 92 *Tergite VI*: (0) without caudal hooklets, although rows of conjunctival spinules may be hook-like anteriorly directed; (1) sometimes with caudal hooklets.
- 93 *Caudal hooklets of tergite II*: (0) present, (1) absent.
- 94 *Pedes spurii B*: (0) present; (1) absent.
- 95 *Pedes spurii A on sternite IV*: (0) present; (1) absent.
- 96 *Pedes spurii A on sternite VI*: (0) present; (1) absent.
- 97 *Tergal conjunctives or posterior of tergal spines*: (0) without spinules, but may have hooklets in single row; (1) with spinules which may be hooklet-like recurved.
- 98 *Spinules on tergal conjunctives*: (0) absent or not hooklet-like recurved or anteriorly directed; (1) hooklet-like recurved or anteriorly directed spinules in about 3 rows.
- 99 *Taeniate L setae*: (0) present; (1) absent.
- 100 *Segment VIII*: (0) with more than 1 L seta; (1) with at most 1 L seta.
- 101 *Posterolateral corners of tergites VI-VIII*: (0) without embedded spines; (1) at least tergite VIII with in most species.
- 102 *Anal lobe*: (0) not extended into projections; (1) extended posteriorly into cylindrical projections with macrosetae at apex.
- 103 *Anal lobe*: (0) not with apical projections or extensions; (1) with apical spurs or extended distal of macrosetae.
- 104 *Apical spines of anal lobe*: (0) absent; (1) present.
- 105 *Anal lobe*: (0) with fringe of setae; (1) without fringe of setae.
- 106 *Inner margin of anal lobe*: (0) without long seta; (1) with.
- 107 *Anal macrosetae*: (0) not short and spine-like, but may be short and hair-like or absent; (1) short and spine- or thorn-like; (2) absent.
- 108 *Width of anal macrosetae or apical spines*: (0) < 5 µm; (1) > 4 µm.

109 *No. of anal macrosetae*: (0) 3 or more; (1) 2; (2) 0-1.

Larva

- 110 *Antenna*: (0) with 6-7 segments; (1) with 5; (2) with 3-4.
 111 *Ultimate antennal segment*: (0) normal; (1) whip- or thread-like.
 112 *Antenna*: (0) reduced, less than half mandible length; (1) 1/3 as long as head capsule or shorter, but not reduced; (2) longer.
 113 *Second antennal segment*: (0) undivided, fully sclerotised; (1) divided or partly unsclerotised.
 114 *Lauterborn organs*: (0) moderately large to well developed; (1) weak or absent.
 115 *Antennal blade*: (0) short to moderate length, shorter than flagellum when antenna of normal length; (1) conspicuous, longer than flagellum except when flagellum extremely long.
 116 *SI*: (0) plumose, branched, toothed or palmate; (1) bifid or simple.
 117 *SI*: (0) not palmate; (1) palmate.
 118 *SI*: (0) not bifid; (1) bifid.
 119 *SI*: (0) not simple; (1) simple.
 120 *Labral lamella*: (0) with pectinate, plumose or rugose apex, mostly well developed; (1) weak, no apical teeth or plumosity; (2) absent.
 121 *Chaetulae laterales*: (0) simple or reduced; (1) at least one serrated or plumose.
 122 *Premandible*: (0) simple; (1) with 2 or more teeth.
 123 *Premandibular brush*: (0) present; (1) absent.
 124 *Mandible*: (0) with 2-3 inner teeth; (1) with 4 or more.
 125 *Mola of mandible*: (0) smooth; (1) with teeth or spines.
 126 *Seta interna of mandible*: (0) with smooth, slightly plumose laterally or apically, or serrate branches; (1) branches conspicuously branched; (2) seta interna absent.
 127 *Median tooth of mentum*: (0) single; (1) double, bifid or with several median teeth.
 128 *Lateral teeth of mentum*: (0) 7 or more pairs; (1) 5-6 pairs; (2) fewer.
 129 *Lateral teeth of mentum*: (0) outer tooth not larger or higher than one of the inner teeth; (1) clearly larger or higher.
 130 *Ventromental plates*: (0) well developed, extending past lateral teeth on flattened mentum, sometimes double; (1) reduced or weak.
 131 *Ventromental plates*: (0) never double; (1) at least sometimes double.
 132 *Ventromental plates*: (0) without setae (beard) underneath; (1) with setae underneath.
 133 *Setae submenti*: (0) situated at level of base of outer lateral tooth or higher; (1) lower.
 134 *Claws of anterior parapods*: (0) with relatively distinct teeth; (1) smooth or teeth very indistinct.
 135 *Procercus*: (0) well developed; (1) reduced or absent.
 136 *Anal setae*: (0) 5 or more setae, none conspicuously long; (1) 3-4 setae, none conspicuously long; (2) 0-2 not conspicuously long anal setae; (3) 2 or more setae with 1 or 2 conspicuously long.
 137 *Supraanal setae*: (0) weak, shorter than 1/2 length of anal setae when these well developed or shorter than 2/3 when anal setae short; (1) well developed, longer than 1/2 length of anal setae when anal setae long, longer than 2/3 when anal setae short.
 138 *Posterior parapods*: (0) well developed; (1) small, digitiform; (2) absent to weak but not digitiform.
 139 *Anal tubules*: (0) at least 1/2 length posterior parapods; (1) shorter than 1/2 length posterior parapods or these absent; (2) conspicuously long and narrow

Table 2. Character states for characters 1-105 in some genera of Orthoclaadiinae. Polymorphies: A=0&1, B=0&1&2, C=1&2, D=1&2&3, E=0&2, F=0&3, G=2&3, H=0&1&2&3, I=0&1&3, J=2&4.

TABLE 2. Character states for characters 1-105 in some genera of Orthocladiinae. Polymorphies: A=0&1, B=0&1&2, C=1&2, D=1&2&3, E=0&2, F=0&3, G=2&3, H=0&1&2&3, I=0&1&3, J=2&4.

	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	3				
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5										
<i>Diplocladius</i>	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	1	1		
<i>Prosilocerus</i>	0	1	0	0	0	0	1	A	1	A	0	0	0	0	A	A	1	?	0	A	1	A	A	0	0	1	1	0	1	0	0	0	0	1	0	
<i>Brillia</i>	0	0	1	1	0	0	0	A	0	0	0	0	1	0	A	1	1	?	0	1	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	
<i>Hydrobaenus</i>	0	1	0	0	0	0	1	0	A	0	0	0	0	0	0	A	0	1	1	0	A	1	A	A	0	0	1	A	A	1	0	0	A	0	A	0
<i>Zalutschia</i>	0	0	0	0	0	0	0	A	0	0	0	0	0	0	0	1	1	0	A	1	A	0	0	0	1	0	A	A	0	0	1	0	1	0	0	
<i>Heterotanytarsus</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	1	0	0	0	0	A	0	1	A	0	0	C	0	0	0	0	
<i>Orthocladus</i>	0	0	0	0	0	0	0	1	0	0	0	0	E	?	A	1	0	0	A	A	A	A	0	1	1	0	0	1	0	0	1	0	A	0	0	
<i>Cricotopus</i>	A	1	A	A	1	0	0	0	A	A	0	0	0	A	A	1	0	0	A	A	A	1	1	1	A	0	1	0	0	1	1	B	0	0	0	
<i>Rheocricotopus</i>	A	0	0	0	1	0	0	1	A	0	0	0	C	A	0	1	A	0	A	1	1	0	0	0	1	A	A	1	0	0	1	0	1	A	0	
<i>Psectrocladius</i>	0	0	0	A	0	0	0	0	1	0	0	0	0	0	A	A	A	0	0	A	1	1	A	0	0	1	0	0	1	0	0	1	0	A	0	
<i>Eukiefferiella</i>	A	1	0	1	A	0	0	0	A	A	0	0	0	0	0	0	1	E	0	0	1	1	0	0	0	1	0	A	1	A	0	1	1	1	0	0
<i>Tvetenia</i>	0	1	0	0	0	0	0	1	A	0	0	0	0	0	0	1	?	0	0	1	1	0	0	0	1	0	A	1	A	0	1	1	1	0	0	
<i>Corynoneura</i>	A	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	?	0	0	1	1	0	0	0	1	0	1	1	A	2	1	3	1	1	0	
<i>Chaetocladus</i>	A	1	A	0	A	0	0	A	A	0	1	0	0	2	A	A	1	0	0	A	A	1	0	0	0	1	1	0	1	0	A	0	0	A	A	0
<i>Bryophaenocladus</i>	0	0	A	0	0	0	0	A	0	0	0	0	0	A	A	A	0	0	A	1	1	0	0	0	1	A	A	A	0	0	1	0	0	A	0	
<i>Limnophyes</i>	A	1	0	0	0	0	0	1	A	0	0	1	2	A	A	1	1	1	1	0	0	0	1	0	1	1	1	0	1	1	0	C	A	0	0	
<i>Gymnometriocnemus</i>	0	0	1	0	0	0	0	1	0	0	1	0	0	?	A	1	1	0	1	1	1	0	0	0	0	1	1	0	0	A	1	0	0	1	0	
<i>Apometriocnemus</i>	0	0	0	?	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	1	1	0	0	2	1	0	0	0	
<i>Metriocnemus</i>	A	1	A	A	0	0	0	A	0	1	0	0	0	1	1	0	0	0	1	0	A	1	0	0	0	A	A	A	A	0	1	0	0	0	0	
<i>Heterotrissocladus</i>	0	0	0	1	0	0	0	0	0	0	0	0	0	0	A	A	A	0	0	A	1	1	A	0	0	A	A	0	1	0	0	1	0	0	0	
<i>Parametriocnemus</i>	A	1	0	0	0	0	0	A	0	0	0	0	0	0	A	A	0	0	A	1	1	A	0	0	0	A	0	1	0	1	1	0	0	0	0	
<i>Aagaardia</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	A	A	0	0	0	0	1	1	A	0	0	1	1	A	0	A	1	0	1	1	0	
<i>Unniella</i>	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	1	0	1	1	0	0	0	1	0	1	1	0	2	1	0	1	0	0	
<i>Parachaetocladus</i>	0	0	1	0	0	0	1	1	0	0	0	0	0	A	0	1	?	0	1	1	A	0	0	0	1	A	0	1	0	1	1	0	0	0	0	
<i>Pseudorthocladus</i>	0	0	1	0	0	1	0	1	A	0	0	0	0	A	A	0	0	0	1	1	1	1	0	0	A	0	0	1	0	1	1	A	0	0	0	
<i>Georthocladus.str.</i>	0	0	1	0	0	0	1	1	0	0	0	0	0	A	A	0	0	0	1	1	A	A	0	0	1	A	0	1	0	A	1	0	A	0	0	
<i>Doithrix</i>	0	0	1	?	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0	1	A	0	A	0	1	1	1	0	0	0	
<i>Antillocladius</i>	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0	A	0	1	A	0	0	1	1	1	A	0	0	
<i>Heleniella</i>	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	1	1	?	0	1	1	0	1	1	1	1	0	1	0	0	2	1	1	1	1	
<i>Lopescladius</i>	A	1	0	?	1	0	0	0	1	1	1	1	0	1	0	0	1	?	0	0	1	1	0	0	0	1	0	1	1	0	1	0	3	1	0	
<i>Stictocladus</i>	A	0	0	1	1	0	0	0	1	1	1	A	0	C	A	A	1	?	0	A	1	1	A	1	1	1	0	A	A	A	1	0	H	A	0	
<i>Krenosmittia</i>	1	1	0	0	0	0	0	1	1	0	1	0	0	0	0	1	?	0	0	1	1	0	0	0	1	0	1	0	1	0	1	C	1	1	1	
<i>Parakiefferiella</i>	A	1	0	?	0	0	0	1	1	0	1	0	0	0	0	1	?	0	0	1	1	0	0	0	1	0	1	0	0	2	1	1	1	1	0	
<i>Pseudosmittia</i>	A	0	A	A	0	0	0	A	1	A	0	A	0	0	0	A	1	2	0	A	A	1	0	0	0	1	0	A	1	A	B	2	1	G	1	
<i>Rhinocladus</i>	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1	C	0	0	0	

TABLE 2 ctd.

	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	7
	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0					
<i>Diplocladius</i>	1	1	0	0	0	1	1	1	3	0	0	1	1	0	1	0	0	1	2	1	0	0	0	0	1	0	0	0	4	1	0	0	0	1	1					
<i>Propsilocerus</i>	1	1	0	1	0	A	0	1	F	0	0	1	A	0	1	0	1	0	1	0	1	0	0	0	A	C	0	0	4	2	0	0	0	0	0					
<i>Brillia</i>	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	2	1	1	0	0	0	1	0	0	0	4	1	1	1	0	0	0					
<i>Hydrobaenus</i>	C	1	1	0	0	0	0	1	3	0	0	A	1	0	0	A	0	1	2	0	0	0	0	0	1	C	1	1	J	1	1	1	0	1	0					
<i>Zalutschia</i>	0	1	1	0	0	0	0	1	3	0	0	1	1	0	0	1	1	0	2	0	0	0	0	0	1	B	1	1	4	1	1	0	0	A	A					
<i>Heterotanytarsus</i>	1	0	1	1	0	1	A	1	3	0	0	1	A	0	0	A	A	1	2	0	1	0	0	0	1	2	0	1	0	0	1	0	0	1	0					
<i>Orthocladius</i>	0	1	0	0	0	A	0	1	3	0	0	1	A	0	0	0	0	1	A	0	A	0	0	0	A	0	0	A	3	1	1	A	0	A	0					
<i>Cricotopus</i>	B	A	C	0	0	1	0	A	I	0	0	C	A	0	A	0	0	1	B	0	1	0	0	0	0	2	B	B	3	1	1	A	0	1	0					
<i>Rheocricotopus</i>	0	1	1	0	A	1	0	0	3	0	0	1	0	1	0	0	0	A	A	0	1	0	0	0	E	1	1	4	1	1	1	1	0	0						
<i>Psectrocladius</i>	0	1	B	0	A	0	0	0	F	0	0	1	1	0	0	0	0	A	E	0	1	0	A	0	A	2	A	1	J	A	1	A	0	1	0					
<i>Eukiefferiella</i>	1	A	C	0	0	A	A	1	0	0	0	C	1	0	0	0	0	A	B	0	0	0	0	0	0	0	0	0	A	1	1	1	1	0						
<i>Tvetenia</i>	1	1	1	0	0	0	A	1	3	0	0	2	1	0	0	0	0	1	E	0	0	0	0	1	2	1	1	4	1	1	0	0	1	0						
<i>Corynoneura</i>	0	1	C	0	A	1	1	1	0	0	0	C	0	1	0	0	2	2	E	0	1	0	0	0	0	1	1	1	0	2	1	1	0	1	0					
<i>Chaetocladius</i>	1	0	1	0	1	0	0	A	3	0	A	1	1	0	A	A	0	1	B	A	A	0	0	0	C	1	1	4	1	1	0	0	0	0						
<i>Bryophaenocladius</i>	0	A	A	A	0	A	1	1	F	0	A	1	A	0	0	0	0	C	1	0	A	0	0	0	1	0	0	0	4	1	1	1	0	A	0					
<i>Limnophyes</i>	2	1	1	0	0	1	A	1	2	0	0	C	1	0	0	0	0	1	0	0	1	0	1	0	1	0	1	B	1	1	4	1	1	0	0	1	A			
<i>Gymnometriocnemus</i>	2	1	1	0	0	1	1	1	2	0	0	A	1	0	0	0	A	C	B	0	1	0	0	1	1	0	1	1	4	1	1	1	0	1	0					
<i>Apometriocnemus</i>	1	0	1	0	0	1	1	1	2	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	?	?	?	?	?	?	?	?	?	?	?					
<i>Metriocnemus</i>	0	1	A	0	A	0	1	1	3	0	0	1	1	0	0	0	0	A	A	0	A	0	0	0	A	A	A	4	1	1	A	1	1	0						
<i>Heterotrissocladius</i>	0	1	1	0	0	1	A	1	3	1	0	2	1	0	0	A	0	1	0	0	0	0	0	0	1	2	A	0	2	1	1	0	0	1	0					
<i>Parametriocnemus</i>	1	1	1	0	0	1	1	1	3	1	0	2	1	0	0	0	0	1	0	0	A	0	0	0	1	2	1	1	J	1	1	0	0	1	0					
<i>Aagaardia</i>	2	1	1	0	0	1	0	1	3	0	0	1	1	0	0	1	0	1	E	0	0	0	0	0	1	2	1	0	2	1	1	1	0	0	0					
<i>Unniella</i>	1	1	1	0	0	1	0	1	3	0	1	1	0	0	0	0	0	1	0	0	1	1	0	0	1	0	1	?	4	1	1	0	0	0	0					
<i>Parachaetocladius</i>	1	1	A	0	0	A	1	0	2	0	0	0	1	0	0	1	0	1	2	0	1	0	0	0	0	0	0	0	4	1	1	1	0	0	0					
<i>Pseudorthocladius</i>	1	1	1	0	0	1	1	0	E	0	0	0	1	0	0	0	0	1	C	0	1	A	0	A	1	0	A	1	4	1	1	1	0	0	0					
<i>Georthocladius s.str.</i>	1	1	A	0	0	0	1	0	2	0	0	0	1	0	0	1	A	0	C	0	1	0	0	0	1	0	0	0	4	1	1	1	0	0	0					
<i>Doithrix</i>	1	1	1	1	0	1	1	0	2	0	0	0	1	0	0	0	0	2	2	0	1	1	0	0	?	?	?	?	?	?	?	?	?	?	?					
<i>Antillocladius</i>	1	1	1	0	0	1	1	1	3	0	0	0	1	0	0	0	0	1	0	0	1	0	0	A	0	2	1	1	4	1	1	0	0	0	0					
<i>Heleniella</i>	1	1	A	0	0	1	A	1	F	0	0	1	1	0	0	0	0	A	2	0	1	0	0	1	0	2	0	0	4	1	1	0	0	1	0					
<i>Lopescladius</i>	?	1	1	0	0	1	1	0	0	0	0	1	1	0	0	0	A	C	2	1	1	0	0	0	?	?	?	?	?	?	?	?	?	?						
<i>Stictocladius</i>	B	0	E	A	0	A	1	1	F	0	0	2	0	0	1	0	A	C	2	1	1	0	0	0	1	2	C	C	4	2	1	A	0	0	0					
<i>Krenosmittia</i>	2	1	1	0	0	1	1	1	G	0	0	C	1	0	0	0	0	1	2	0	1	0	0	1	0	2	1	1	1	1	1	0	0	1	0					
<i>Parakiefferiella</i>	2	1	1	0	A	1	1	1	3	0	1	1	A	0	0	0	0	1	C	0	1	0	0	1	0	2	1	1	1	1	1	0	0	1	0					
<i>Pseudosmittia</i>	2	1	1	0	A	A	A	1	A	0	0	2	0	0	0	0	A	C	C	0	1	0	1	0	0	E	1	A	4	2	1	0	0	A	0					
<i>Rhinocladius</i>	1	1	1	0	1	1	1	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	1	2	1	1	4	1	1	0	0	1	1					

