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## West African *Adicella* MCLACHLAN, 1877 (Trichoptera: Leptoceridae)

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### Abstract

One new *Adicella* MCLACHLAN species is described, and two previously described species, *A. occidentalis* GIBON, 1986, and *A. silvestris* KIMMINS, 1959, are redescribed and figured based on adult males from Ghana.

**Key words:** Trichoptera, Leptoceridae, *Adicella unnuensis* sp. n., Ghana

### Introduction

The long-horned caddisfly genus *Adicella* MCLACHLAN, 1877, is distributed in the Eastern and Western Palearctic, Oriental and Afrotropical biogeographical regions. Of the 93 species included in the genus (MORSE 1999), six are described from the Afrotropical biogeographical region. In addition, *A. syriaca* ULMER, 1907, a species described from Lebanon, has been recorded from East Africa (see ULMER 1909, LESTAGE 1919). However, according to SCOTT (1986) and BOTOSANEANU (1992) this record is doubtful as other species might be involved.

From West Africa, only *Adicella occidentalis* GIBON, 1986, has been described to date. In a preliminary check-list of the caddisflies of Ghana, KJÆRANSEN & ANDERSEN (1997) listed four species of *Adicella* from the country, of which three were assumed to be undescribed. At closer examination, however, one of these proved to belong to *Tagalopsyche* BANKS, 1913, and will be described elsewhere, one is *A. silvestris* KIMMINS, 1959, described from East Africa, while the third species is described below.

The genus *Adicella* is a member of the tribe Triaenodini MORSE, 1981. According to MORSE (1981) and YANG & MORSE (1993), the monophyly of this tribe is demonstrated by 1) the lack of Fork 5 in the hind wings, and 2) the trifold condition of the upper part of tergum X of the ♂ genitalia. *Triaenodes* MCLACHLAN, 1865, is the only other genus in this tribe occurring in the Afrotropical biogeographical region. The adults of

the two genera can, in most cases, easily be separated by the presence in *Adicella*, and the absence in *Triaenodes*, of the stem of forewing M. However, as pointed out by YANG & MORSE (1993), several Afrotropical *Triaenodes* species have an incomplete or even complete, but usually weak M stem. In light of the unreliability of the presence or absence of a stem for the forewing M vein YANG & MORSE (1993) and ANDERSEN & HOLTZENTHAL (1999) pointed out that Fork 2 in the forewing is subrectangular in *Adicella*, while subtriangular in *Triaenodes*. Further, the lower part of tergum X is narrow in *Triaenodes* and covers only the dorsum of the phallus, while it is much higher in *Adicella* and nearly surrounds the phallus. *Triaenodes* also has a comparatively long antennal scape, in the males usually with a scent organ, while *Adicella* males always lack an antennal scape scent organ.

The present paper forms part of the scientific results of a joint project on freshwater entomology in Ghana set up in 1991 between the Institute of Aquatic Biology, C.S.I.R., Ghana; the Department of Zoology, University of Ghana; and the Museum of Zoology, University of Bergen, Norway.

### Material and methods

Methods used in preparing, examining, and illustrating genitalia are those that are commonly used in the study of Trichoptera (see BLAHNIK 1998). The terminology is adopted from MORSE (1975), SCHMID (1980), and YANG & MORSE (1993). The measurements, in millimeters, are given as the range followed by the mean when more than three specimens are measured. The redescrptions of *A. occidentalis* and *A. silvestris* are both based on material collected in Ghana. The holotype and one paratype of *A. uwuensis*, **sp. n.** are deposited in the University of Minnesota Insect Collection (UMSP), St. Paul, Minnesota, USA; one paratype is in the Museum of Zoology (ZMBN), University of Bergen, Norway. Material of the two other species are also deposited in the same collections. The specimens are preserved in alcohol, if not otherwise stated.

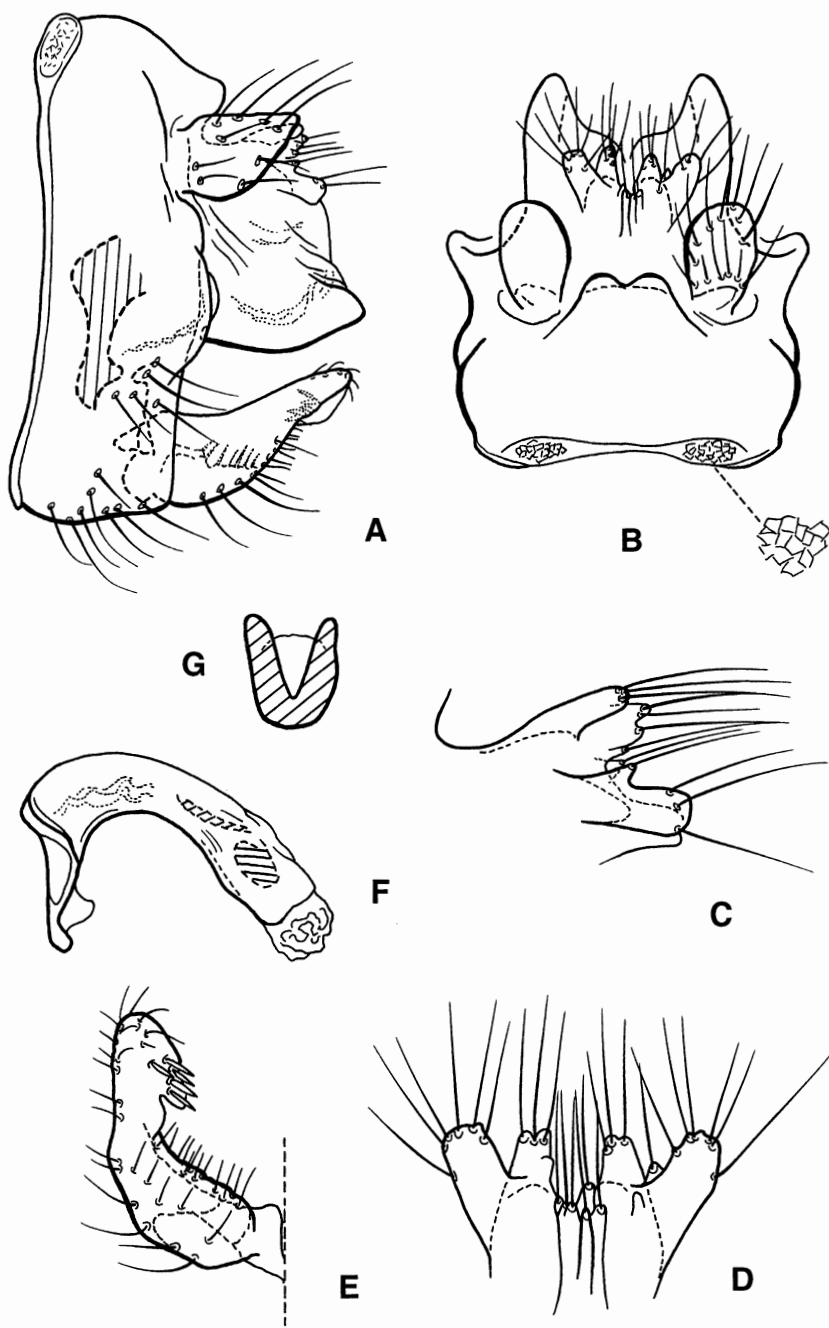
### ***Adicella uwuensis*, sp. n.**

(Fig. 1)

Type material: — HOLOTYPE, ♂, GHANA: Volta Region: River Uwue south of Lipke Mate, 6.xi.1995, at light, NUFU-project (UMSP). PARATYPES: 1 ♂, GHANA: Volta Region: Agumatsa Waterfalls, Wli, 11.iii.1993, at light, NUFU-project; 1 ♂, GHANA: Volta Region: Agumatsa Waterfalls, Wli, 19.xi.1993, at light, NUFU-project.

Etymology: — Named after River Uwue in the Volta Region in East Ghana, using the Latin suffix *-ensis* denoting place of origin.

Diagnostic characters: — The species is similar to *A. occidentalis*. However, while the upper part of tergum X dorsally has several, narrow, median lobes, and laterally a broad, bilobed lobe in *A. uwuensis* **sp. n.**, in *A. occidentalis* the upper part of tergum X bears several short, irregular, median setose projections dorsally. Further, in *A. occidentalis* the inferior appendage in ventral view has the distal half forming nearly a straight angle (90°) with the basal half, and with the apical 1/3 subrectangular with a sharply pointed



**Fig. 1.** Male genitalia. *Adicella uvuensis* sp. n., holotype, River Uvuwie, Volta Region, Ghana: A. Lateral. B. Dorsal. C. Upper part of Tergum X, lateral. D. Upper part of Tergum X, dorsal. E. Inferior appendage, ventral. F. Phallus, lateral. G. Phallotremal sclerite, dorsal.

ventromesal corner and rounded apex, bearing a row of three strong, spinelike setae mesally. In *A. unuensis* **sp. n.** the inferior appendage in ventral view has the apical 1/3 forming an approximately 120° angle with the base, and with a triangular, broadly rounded apex and sharply pointing ventromesal corner, bearing five strong, spinelike setae mesally in a single to partly double row.

#### Description.

♂. (n=3): Forewing length 6.4-6.9 mm, hind wing length 4.6-5.2 mm. Eye 0.39-0.43 mm wide. Antenna at least 18.5 mm long, including 0.39-0.40 mm long scape. Maxillary palp segment lengths I-V (in mm): 0.34-0.40, 0.52-0.55, 0.49-0.61, 0.31-0.42, 0.61-0.70. Color in alcohol overall dark brown.

♂ genitalia (Fig. 1): Abdominal segment IX subrectangular. Preanal appendage in lateral view triangular, in dorsal view broadly rounded, setose. Upper part of tergum X with complex of setose lobes, dorsally with several, narrow, median lobes with strong setae apically, lateral lobe broad, bilobed, dorsal part pointing posterolaterad, with rounded, setose apex; ventral part pointing caudad, with irregular, setose apex. Lower part of tergum X broad, rounded, with posteroventral corner extended, triangular; in dorsal view convex laterally, with wide V-shaped excision apically. Inferior appendage with broad base, gradually narrowing, slightly sinuous subapically, with rounded apex; in ventral view apical 1/3 forming approximately 120° angle with base, with median constriction and triangular, broadly rounded apex and sharply pointing ventromesal corner, with 5 strong, spinelike setae mesally in single to partly double row. Phallus curved, tubular; phallotremal sclerite U-shaped.

*Distribution.* — The species is known only from two localities in the Volta Region in Ghana.

*Habitat.* — Taken at small, moderately to fast flowing rivers in the southeastern, forested parts of the country.

### ***Adicella occidentalis* GIBON**

(Fig. 2)

*Adicella occidentalis* GIBON, 1986: 162, figs 5-7 [Type material: GUINEA: Konsankoro Region: Milo; Musée royal de l'Afrique centrale, Tervuren; ♂]; KJÆRANDSEN & ANDERSEN 1997: 246.

Material examined: — 2 ♂, GHANA: Volta Region: Agumatsa Waterfalls, Wli, 5-14.iii.1993, Malaise traps, NUFU-project; 1 ♂, GHANA: Volta Region: Togabe Falls, Woti, 9.xi.1995, at light, NUFU-project.

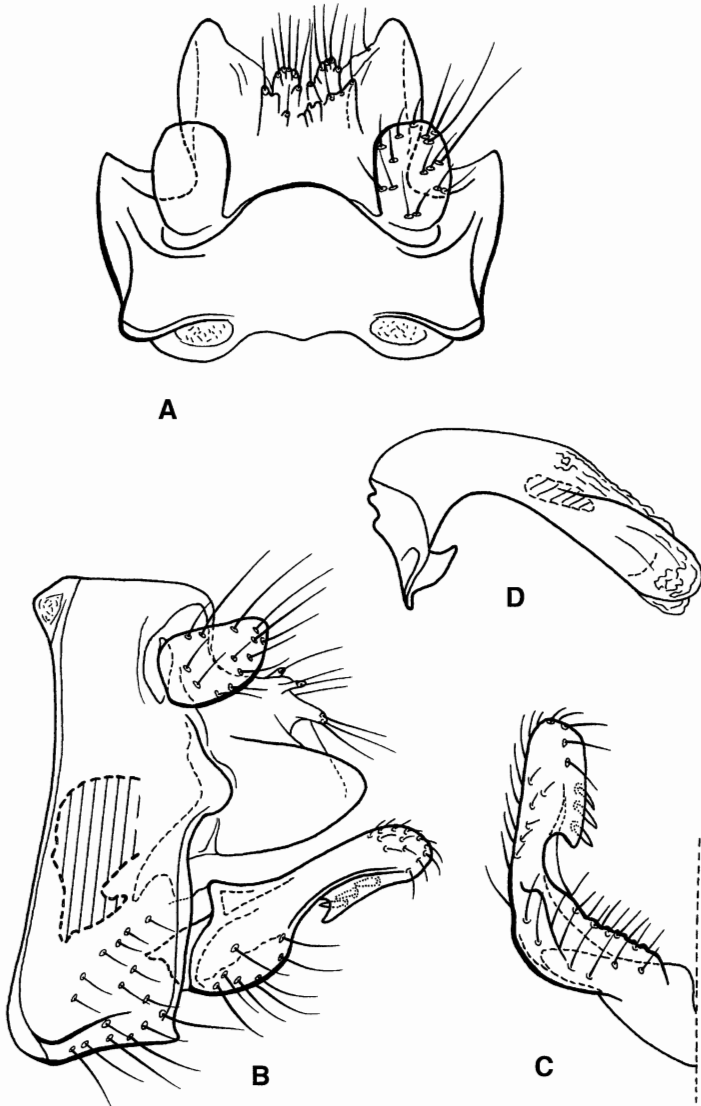
Diagnostic characters: — See *A. unuensis*, **sp. n.**

#### Redescription.

♂ (n=3): Forewing length 5.6-6.2 mm; hind wing length 4.4-4.8 mm. Eye 0.34-0.37 mm wide. Antenna at least 16.6 mm long, including 0.34-0.40 mm long scape. Maxillary palp segment lengths I-V (in mm): 0.34-0.37, 0.47-0.53, 0.52-0.53, 0.37-0.40, 0.66-0.71. Color in alcohol overall dark brown.

♂ genitalia (Fig. 2): Abdominal segment IX subrectangular, pleural region with small rounded lobe. Preanal appendage small, rounded, setose. Upper part of tergum X with

short, irregular, median setose projections. Lower part of tergum X membranous dorsally, sclerotized laterally with rounded apex; in dorsal view convex laterally, with broad V-shaped excision apically. Inferior appendage broad basally, distal half subrectangular with rounded apex; in ventral view distal half forming nearly straight angle ( $90^\circ$ ) with basal half; constricted medially with apical 1/3 subrectangular with sharply pointed ventromesal corner and rounded apex, bearing row of three strong, spinelike setae mesally. Phallus curved, tubular, phallosomal sclerite U-shaped.



**Fig. 2.** Male genitalia. *Adicella occidentalis* GIBON Togabe Falls, Volta Region, Ghana: A. Dorsal. B. Lateral. C. Inferior appendage, ventral. D. Phallus, lateral.

*Distribution.* — The type locality is in Guinea (GIBON 1986). KJÆRANDSEN & ANDERSEN (1997) recorded the species from Central Region and Volta Region in Ghana.

*Habitat.* — In Ghana the species has been taken at small, fast flowing rivers in the southern, forested parts of the country.

### ***Adicella silvestris* KIMMINS**

(Fig. 3)

*Adicella silvestris* KIMMINS, 1959: 54, figs 26-28 [Type material: UGANDA: Ruwenzori Range: Semliki Forest; British Museum (Natural History); ♂, ♀]; CORBET 1961: 359; FISCHER 1972: 82 [catalogue]; JOHANSON 1992: 129 [catalogue].

Material examined: — 2 ♂, GHANA: Volta Region: Togabe Falls, Woti, 9.xi.1995, at light, NUFU-project; 3 ♂, GHANA: Volta Region: Agumatsa Waterfalls, Wli, 5-14.iii.1993, Malaise trap, NUFU-project.

Diagnostic characters: — The shape of the upper part of tergum X, with paired, digitate, setose projections, apparently separate this species from other Afrotropical *Adicella* species.

#### Redescription

♂. (n=3-5): Forewing length 4.8-6.1, 5.4 mm; hind wing length 3.9-5.0, 4.3 mm wide. Eye 0.30-0.40, 0.34 mm wide. Antenna at least 8.8 mm long, including 0.27-0.39, 0.32 mm long scape. Maxillary palp segment lengths I-V (in mm): 0.22-0.28, 0.24; 0.34-0.46, 0.38; 0.42-0.49, 0.44; 0.27-0.31; 0.49-0.60. Color in alcohol overall dark brown.

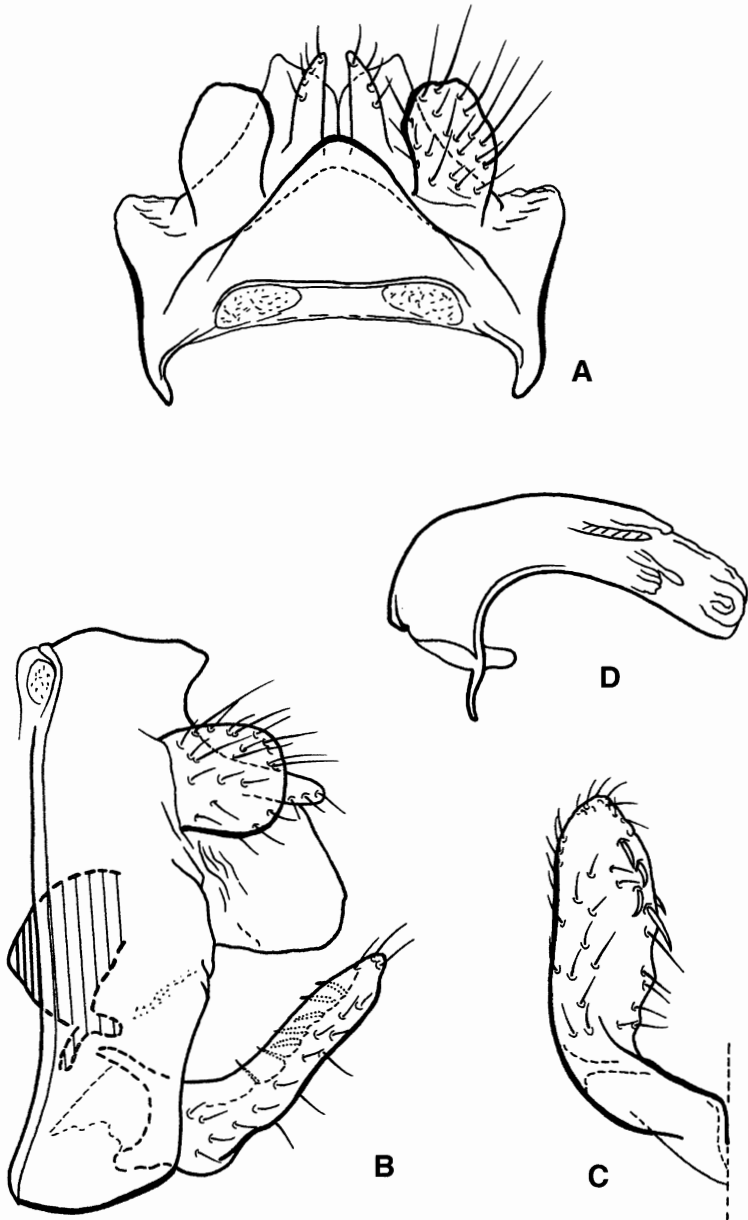
♂ genitalia (Fig. 3): Abdominal segment IX subrectangular. Preanal appendage short, broadly rounded, setose. Upper part of tergum X with paired, digitate, setose projections; in dorsal view with apices converging. Lower part of tergum X broad, rounded, projecting ventrocaudad; in dorsal view concave laterally, with broad V-shaped excision apically. Inferior appendage narrow, curved posterodorsad; in ventral view with distal 1/3 forming approximately 120° angel with base; subeliptic, mesal margin slightly irregular medially; with 5-6 strong spinelike setae mesally. Phallus curved, tubular; phallosomal sclerite U-shaped.

*Distribution.* — The species was described by KIMMINS (1959) from the Ruwenzori Range in western Uganda, and was later recorded by CORBET (1961) from the Mpanga Forest in Uganda. The present paper adds records from the Volta Region in Ghana in West Africa.

*Habitat.* — In Ghana the species was taken at small, fast flowing rivers in the southeastern, forested parts of the country.

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**Fig. 3.** Male genitalia. *Adicella silvestris* KIMMINS Togabe Falls, Volta Region, Ghana: A. Dorsal. B. Lateral. C. Inferior appendage, ventral. D. Phallus, lateral.

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