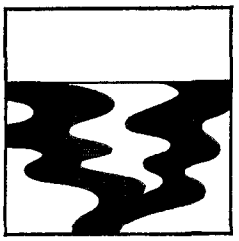

Ephemeroptera from West Africa : the genus Ophelmatostoma *(Baetidae)*

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Abstract

A description is given of the previously unknown adult of Ophelmatostoma *Waltz and McCafferty. The single species in the genus,* O. kimminsi *Waltz and McCafferty, 1987, is shown to be a synonym of* Pseudocloeon camerunense *Ulmer, 1920. An account is given of the distribution and ecology of the species in West Africa.*

Key words : Ephemeroptera — Baetidae — *Ophelmatostoma* — Geographical distribution — Taxonomy — Ecology — West Africa.

Résumé

Éphéméroptères de l'Afrique de l'Ouest : le genre *Ophelmatostoma* (Baetidae)

*Les auteurs donnent une description de l'adulte jusqu'ici inconnu d'*Ophelmatostoma *Waltz et McCafferty. Il est démontré que la seule espèce de ce genre,* O. kimminsi *Waltz et McCafferty, 1987, est synonyme de* Pseudocloeon camerunense *Ulmer, 1920. La distribution de cette espèce en Afrique de l'Ouest, ainsi que les éléments de son écologie, sont également fournis.*

Mots clés : Ephéméroptères — Baetidae — *Ophelmatostoma* — Distribution géographique — Écologie — Taxonomie — Afrique de l'Ouest.

INTRODUCTION

In 1952, Professor Lewis Berner made a collection of mayfly nymphs from the River Shire in Malawi, which were reported on by Kimmins (1955). Among them were three nymphs with most unusual mouthparts, which he described under the name *Pseudocloeon* sp. A. In the course of their revision of species formerly placed in this genus, Waltz and McCafferty (1987) created the new genus *Ophelmatostoma* for this taxon, giving it the specific name *O. kimminsi*. The adult remained unknown.

Nymphs of *Ophelmatostoma* are widespread in West African rivers, and in recent years we have been able to rear the adults. A comparison of these adults with descriptions of *Pseudocloeon camerunense*

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Ulmer has shown them to be conspecific. The specific name *kimminsi* Waltz and McCafferty therefore falls in synonymy with *camerunense* Ulmer.

The genus *Ophelmatostoma* is accordingly redefined here and a full description of the single species in the genus, *O. camerunense* is presented.

Ophelmatostoma Waltz & McCafferty, 1987

ADULT: Fore wing with paired marginal intercalaries; hind wing absent. ♂ forceps with 3 segments, 1 and 2 apparently fused.

NYMPH: Maxillary palps 2-segmented, markedly slender, not extending beyond galea-lacinia; apex of maxilla with a short row of long, fine setae extending beyond the falcate apical tooth. Labium highly modified; glossae and paraglossae greatly elongated, slender, subapically with a ring of long fine setae, the glossae with an additional apical fringe of setae; segments 2 and 3 of palps fused into a slender club, basal segment abruptly angled internally at joint with club, which thus comes to lie between the glossae. Wing pads fused at extreme base. Femora lacking basal ventral patch of setae.

TYPE SPECIES: *O. camerunense* (Ulmer).

The adult of *Ophelmatostoma* resembles *Pseudopannota* and those species formerly placed in *Pseudocloeon* Klapálek in the absence of a hind wing. The nymph resembles *Pseudopannota (Hemipannota)* Elouard and Gillies in the fusion of the wing pads at the extreme base, in the fusion of the canines of the mandibles and in the stout tarsal claws with a limited number of well developed denticles. It differs from all other genera by the unique development of the labium. In intact specimens, the brush-like setae of the glossae and paraglossae are spread out radially on either side of the mouth (see fig. 2, WALTZ & MCCAFFERTY, 1987). They presumably have a particle-gathering function.

Ophelmatostoma camerunense (Ulmer), comb. nov.

Pseudocloeon camerunense, ULMER, 1920, *Arch. Naturg.* 85A, 11: 57.
Pseudocloeon sp. A., KIMMINS, 1955, *Ann. Mag. nat. Hist.* (12) 8: 855.
Pseudocloeon camerunense, KIMMINS, 1960, *Bull. Brit. Mus. (Nat. Hist.), Entom.* 9:344.
Pseudocloeon sp. A. of Kimmins, AGNEW, 1963, *Hydrobiol.* 22: 43.
Pseudocloeon sp. A of Kimmins, DEMOULIN, 1970, *S. Afr. Animal* Life 14:81.
Ophelmatostoma kimminsi, WALTZ & MCCAFFERTY, 1987, *Proc. ent. Soc. Wash.* 89:97. Syn. nov.

♂ IMAGO (Fig. 1): Turbinate eyes reddish-orange, well separated. Thorax pale brown with more strongly marked lateral bands, median suture dark brown; posterior half of metanotum conspicuously dark brown; thoracic sterna dark brown. Legs: femora pale brown, tibiae and tarsi cream. Fore wing (fig. 2) hyaline except for some frosting of the costal and subcostal areas; 2 cross veins in R1 area, marginal intercalaries present from second radial interspace.

Abdominal terga I-IV translucent yellow, V-VIII brown, IX white or very pale brown, X brown. Sterna VIII and IX tinged with brown. IXth sternite projecting posteriorly forming an acute penis-cover between the bases of the forceps (fig. 3). Inner distal margin of forceps base projecting medially at apex. Tails white.

Body 4-5mm; wing 4.5-5.5mm.

♀ IMAGO (Fig. 4): Abdominal terga II-V with rectangular, orange, lateral spots; VI-VIII almost entirely orange, the same colour spreading over IX-X to a variable extent.

NYMPH (Fig. 5): Body generally brown with variable markings; in West African material these are usually confined to a median pale streak on the vertex, extending onto the pronotum, and median pale spots on the posterior abdominal segments. Mouthparts (Fig. 6). Basal 2/3 of fore femora mostly brown, mid and hind femora with a well marked dark brown band before the apex; tarsal claws (Fig. 6f) with 4-6 teeth. Gill I about half the size of gills II-VII; distal half of anterior and posterior margins of lamellae finely toothed. Posterior margins of terga with numerous coarse teeth. Median filament about 2/3 length of cerci.

Comparison of West African material with KIMMINS's description of nymphs from Malawi shows no significant differences. The single species *O. camerunense* is therefore recognised here.

DISTRIBUTION: Known from the Eastern Transvaal in South Africa, AGNEW (1963), Zimbabwe, AGNEW *(loc. cit.)*, Malawi, Uganda, KIMMINS (1960), and numerous localities in West Africa (Fig. 7). West African collections are given below. Names of countries are abbreviated as follows: (G) Guinea, (C. d'I.) Côte d'Ivoire, (M) Mali, (N) Nigeria, (S) Senegal, (S.L.) Sierra Leone, (T) Togo.

R. NIGER basin: Niger at Bamako (M): 14.ix.84, 1 ♂ i., 1 ♀ i. Milo at Bousoulé (G): 22.iii.86, 4LL; 22.v.86, 8 LL. Niandan at Sassambaya (G): 20.iv.86, 2 ♂ i., 1 ♂ s.i.; 16.iii.88, 20 ♂ i., 10 ♀ i.; 6.iv.88, 4LL. Tinkisso at Dabola (G): 1.ii.87, 1 ♂ i. Bagoé at Kouto (C. d'I.): 11.iii.78, 30 LL. R. SENEGAL basin: Falémé at Djidian Kéniéba (M): 13.xi.84, 7 LL; 10.i.86, 100

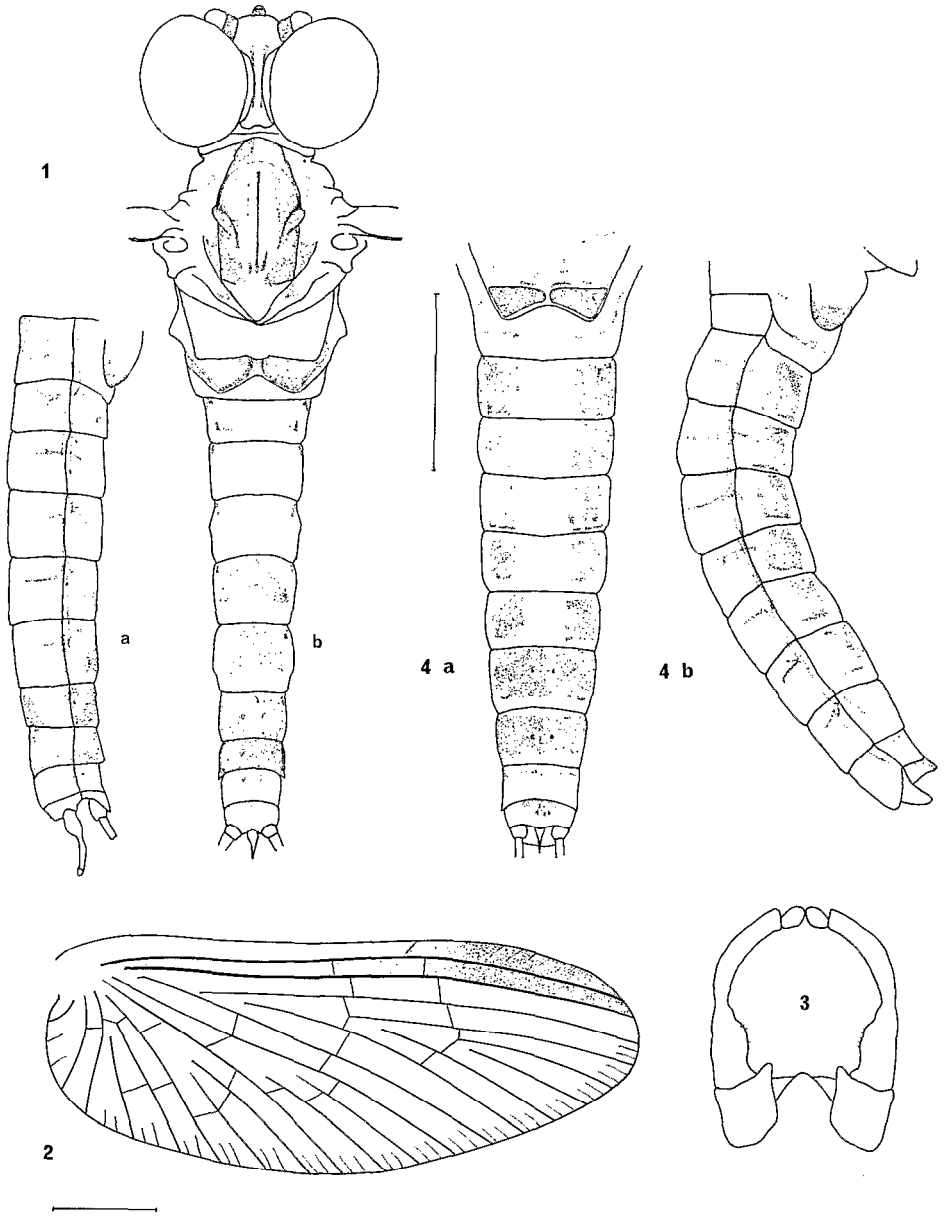

FIG. 1-4. — *O. camerunense*. 1. ♂ imago. a. lateral, b. dorsal, scale 1mm. 2. ♂ wing, scale 1mm. 3. ♂ forceps. 4. ♀ imago, a. dorsal, b. lateral, scale as ♂.

♂ i., 1000 LL. Falémé at Karmafassa (M): 23.i.89, 1 ♂ i. Bakoyé at Kokofata (M): 12.xi.84, 21 LL; 21.xi.84, 36 LL; 21.x.85, 1 ♂ i., 50 ♂ and ♀ s.i., 5 LL: 10.i.86, 1000 LL; 16.xii.86, 11 ♂ i.; 12.i.87, 1 ♂ i.; 17.vii.87, 3 ♂ i. Baoulé route Kati-Kita (M): 22.xi.84, 6 LL. Bafing at Timbo (G): 3.i.87, 12 ♂ i. R. GAMBIA basin: Gambia at Samékouta (S): 24.i.89 2 ♂ i., 2 ♂ s.i., 12 ♀ i., 1 ♀ s.i., 12 LL. Gambia at Mako (S): 26.i.89, 6 ♂ i., 3 ♀ i., 3 LL. Koulountou route Youkounkoun-Koundara (G): 5 ♂ i., 8 LL. R. BANDAMA basin: Maraoué at Entomokro (C. d'I.): 14.ii.88, 22 ♂ i., 3 ♀ i., 2 ♀ s.i. R. MONO basin: Mono at Landa (T): 1.xii.85, 6 ♂ i. Mono at Atchinedji (T): 26.xi.85, 3 ♂ i. Mono at Tchamba (T): 2.xii.85, 4 ♂ i.

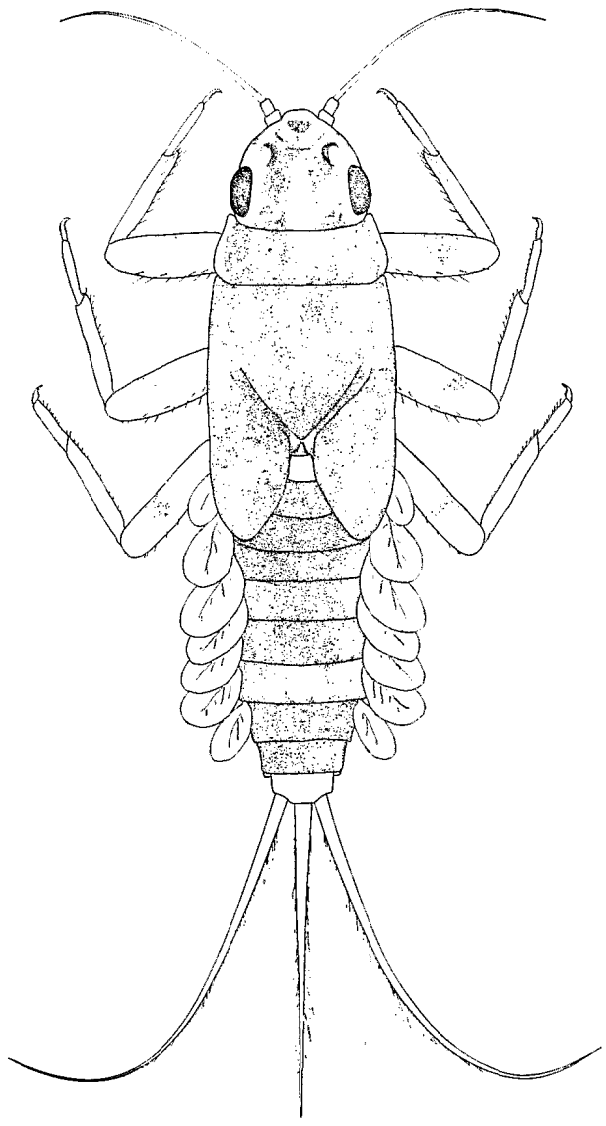

FIG. 5. — *O. camerunense*, Nymph (♀).

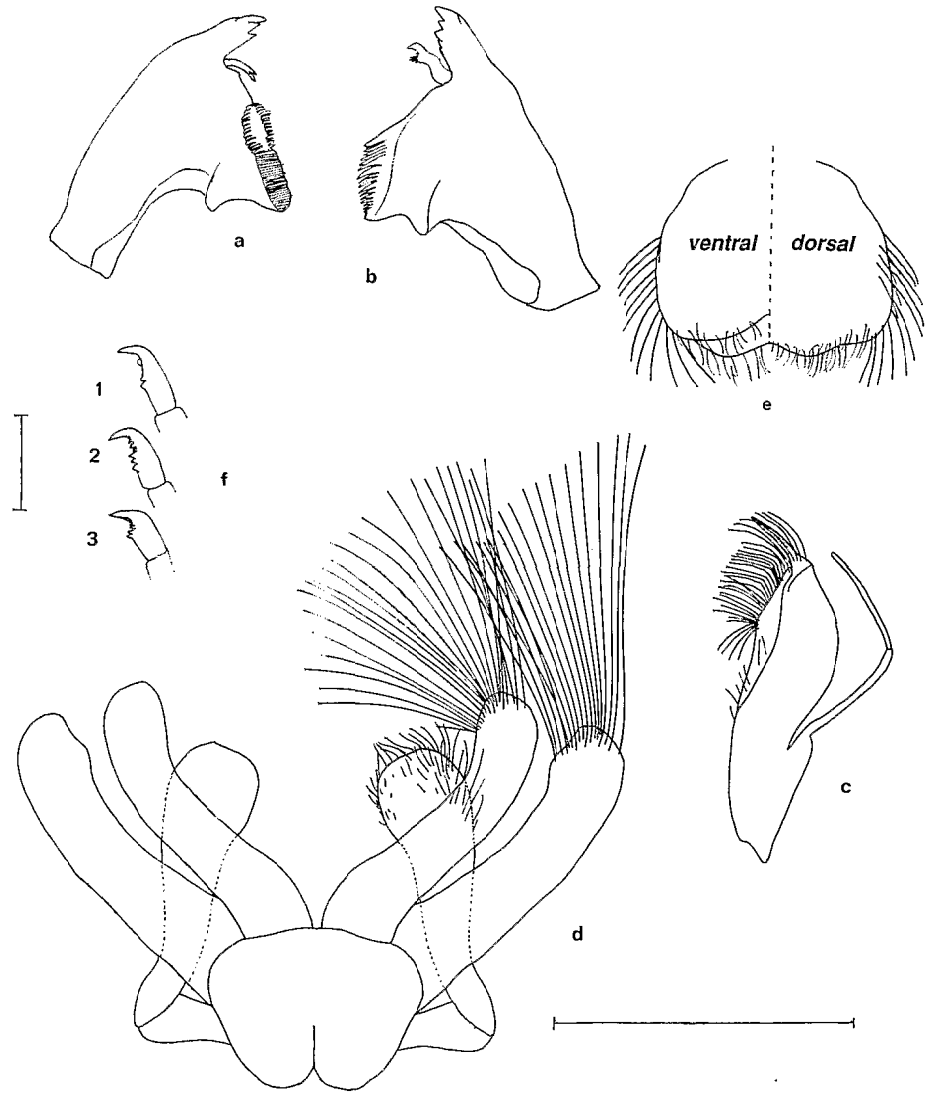

FIG. 6. — *O. camerunense*, Nymph, mouthparts, scale 40μ. a. right mandible, b. left mandible, c. maxilla, d. labium, e. labrum, f. tarsal claws, scale. 0.2mm.

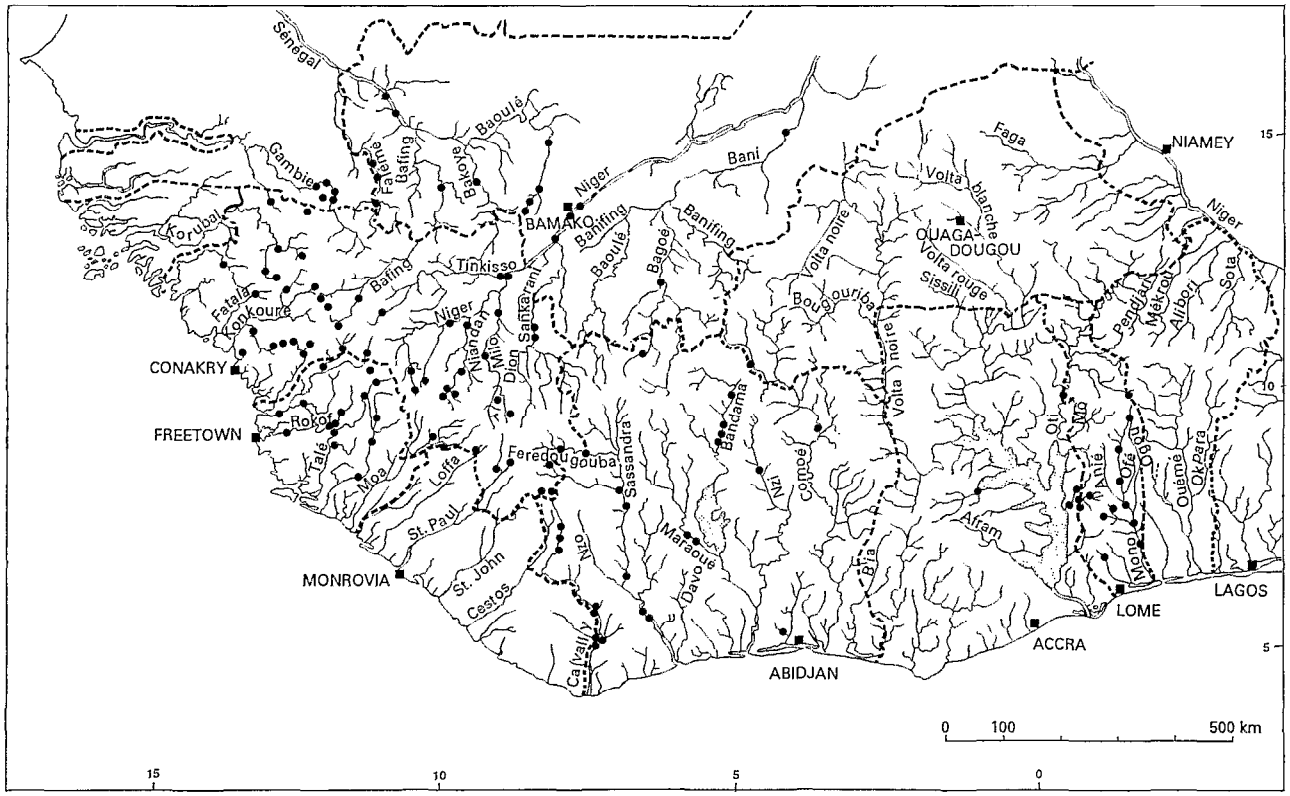

FIG. 7. — *O. camerunense*, Recorded distribution in West African rivers. Répartition observée dans les rivières de l'Afrique de l'Ouest.

R. KONKOURÉ basin: Konkouré at Linsan (G): 29.i.87, 4 ♂ i., 1 ♂ s.i., R. KORUBAL basin: Koumba at Gaoual (G): 29.i.89, 1 ♂ i. Tominé at Karmafassa (G): 1.i.89, 7 ♀ i. R. LITTLE SCARCIES basin: Kaba route Faranah-Mamou (G): 7.ii.86, 1 ♂ i. Kaba at Outamba Kilims National Park (S.L.): 4.ii.89. 1 ♂ i., 2 ♂ s.i. R. CAVALLY basin: Cavally at Ouéyakolé (C.I.): 2.ii.88, 21 ♂ i. R. LOFFA basin: Loffa at Macenta (G): 20.ii.87, 2 ♂ i. R. ST PAUL basin: Diani at N'zébela (G): 3.ii.88, 7 ♂ i. R. FATALA basin: Fatala at Mahbé (G): 1.ii.89, 1 ♂ i. R. KOLENTE basin: Kolente at Simbareya (G): 3.ii.89, 1 ♂ i. R. SASSANDRA basin: Mbôo at Fameudougou (G): 9.iii.88, 1 L. Also in outlet of I.I.T.A. Lake, Ibadan (N), S. Ogbogu: 11.vii.89, 1 L.

ECOLOGY

In West Africa *O. camerunense* seems to be restricted to rivers of the Sudanese and Guinean savanna regions. Larval densities begin to rise at the end of the rainy season as the water level falls and reach a maximum at the end of the dry season in March or April. In rivers in which the flow is seasonal the annual peak occurs at the beginning of the dry season in November or December before the water ceases to flow. Nymphs are concentrated in growths of Podostemaceae and to a lesser extent under stones. They show a preference for current speeds of the order of 1.0 ms^{-1}. The duration of nymphal devlopment is 10-30 days at 33°, i.e. in the same range as *Pseudopannota bertrandi*, ELOUARD *et al.*, (1990). We have seen males swarming beside the River Gambia in February at 0800h.

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