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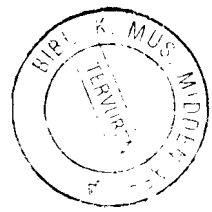

Aethiomastacembelus shiloangoensis, a new spiny-eel from the Shiloango River basin, Africa (Synbranchiformes: Mastacembelidae)

Emmanuel J. Vreven*

Aethiomastacembelus shiloangoensis, new species, from the Shiloango River basin (Democratic Republic of Congo) is distinguished from all other African Mastacembelidae by the following unique combination of characters: 24-26+1 dorsal spines; no preorbital or preopercular spines; origin of soft part of dorsal fin situated anterior to origin of soft part of anal fin; origin of first dorsal spine situated just behind posterior edge of pectoral fin; and a colour pattern characterised by a series of mediodorsally situated dark brown to black spots on body, tail and proximal parts of dorsal and anal fins.

Introduction

Mastacembelidae are anguilliform fishes which can attain a maximum length of about one meter. The rostral appendage bears two tubulated anterior nostrils on each side of a central rostral tentacle. The gill opening is reduced due to a connection of the opercular membrane with the lateral wall of the body. Mastacembelidae have a long series of well-separated dorsal spines and a short series of anal spines. Pelvic girdle and fins are absent. In African species, the dorsal, caudal and anal fins are confluent. Most species have a large number of small cycloid scales (see also Poll, 1957; Lévêque et al., 1990; Skelton, 1993).

Within the framework of an ongoing revision of the African Mastacembelidae, four specimens originating from the Shiloango River basin [Democratic Republic of Congo (DRC)], were discovered that do not fit the description of any known species. In 1987 also Travers recognised three of these specimens as a new species and labelled them as *Mastacembelus* sp. n.. A detailed biometrical and morphological study of the specimens led to the recognition of a new species.

Material and methods

27 morphometric measurements and 12 meristics were taken (see Vreven & Teugels, 1996, 1997). The counts were taken on radiographs made with a Balteau 5-50 kV equipped with a Tubix cell, Type 6LA.

Institutional abbreviations used: AMNH, American Museum of Natural History, New York; ANSP, Academy of Natural Sciences, Philadelphia; BMNH, Natural History Museum, London;

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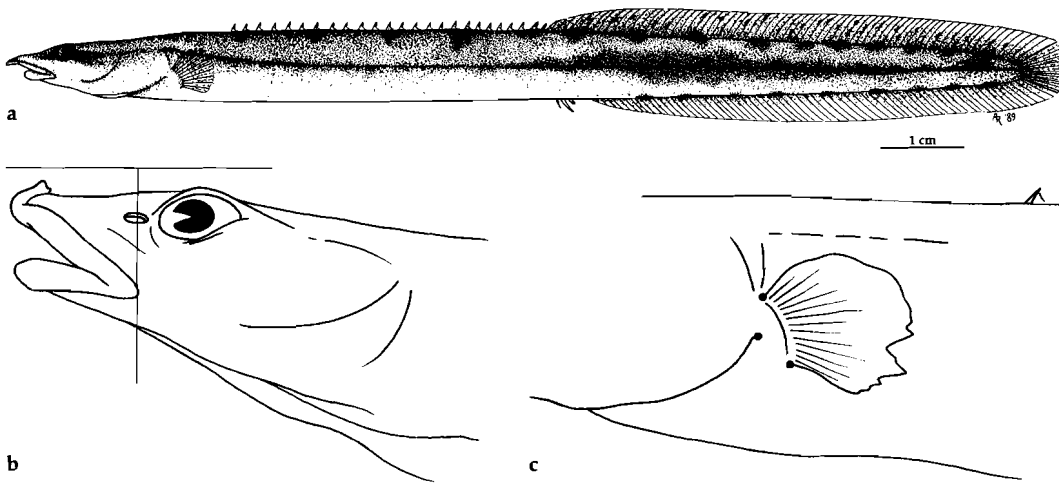

Fig. 1. *Aethiomastacembelus shiloangoensis*, holotype, MRAC 19961, 125 mm SL; Democratic Republic of Congo: Mayumbe (drawn by Alain Reygel); **a**, lateral view; **b**, position of posterior angle of lips relative to posterior nare and eye. Vertical line is perpendicular to a horizontal line parallel to upper surface of snout (right side, reversed); **c**, detail of pectoral fin region. Upper corner of gill slit, dorsal and ventral point of the pectoral-fin base marked by dots (right side, reversed).

CAS, California Academy of Sciences, San Francisco; EBD, Estación Biológica de Doñana, Sevilla; IRZV, Institut des recherches Zootechniques et Vétérinaires, Foumban; MCZ, Harvard University, Museum of Comparative Zoology, Cambridge; MRAC, Musée Royal de l'Afrique Centrale, Tervuren; MNHN, Muséum National d'Histoire Naturelle, Paris; NMW, Naturhistorisches Museum, Wien; and USNM, National Museum of Natural History, Washington.

The generic membership of the different species cited follows the most recent citation of the species by Travers (1984b, 1988, 1992a-b), Travers et al. (1986) and Roberts & Travers (1986).

Aethiomastacembelus shiloangoensis, new species
(Fig. 1)

Mastacembelus: Tshibwabwa, 1997: 487. (undescribed species, Shiloango River basin)

Mastacembelus flavomarginatus non Boulenger, 1898: David & Poll, 1937: 247, 280. (Kisurila, Democratic Republic of Congo)

Holotype. MRAC 19961, 125 mm SL; Democratic Republic of Congo: Riv. Kiswila au Nord de Tondi, Mayumbe [Kishuila ± 4°49'S 13°10'E]; A. Collart, 31 July 1926.

Paratypes. MRAC 19962-963, 126-130 mm SL; same data as holotype. – MRAC 174146, 144 mm SL; Democratic Republic of Congo: Kitadi, Riv. Shiloango, Terr. de Tshéla, Mayumbe [Kitadi ± 4°50'S 13°06'E]; L. Vandevelde, 5 August 1958.

Diagnosis. *Aethiomastacembelus shiloangoensis* is distinguished from all other African Mastacembelidae by the following unique combination of characters: 24-26+1 (median: 25+1) dorsal spines; no preorbital spine; no preopercular spines; anterior origin of first dorsal spine just behind posterior edge of pectoral fin, distance between these two parts 2.5-9.9 (mean: 5.3) % HL; origin of soft part of dorsal fin always situated anterior to origin of soft part of anal fin; colour pattern characterised by a series of mediodorsally situated dark brown to black spots on body, tail and proximal parts of dorsal and anal fins.

Description. Based on type material. Selected morphometrics and meristics in Table 1.

Snout blunt. Posterior angle of lips below posterior nare (Fig. 1b). Upper corner of gill opening slightly anterior to dorsal point of pectoral-fin base, both points clearly anterior to ventral point of pectoral-fin base. Gill slit open; upper corner of gill opening situated about opposite or halfway above mid-base of pectoral fin (Fig. 1c). Lateral line continuous from head up to about ⅓

of distance between head and anus; discontinuous further posteriorly. Rostral appendage short.

Preanal length negatively allometric, postanal length positively allometric, about equal in small specimens (< 130 mm SL), preanal length clearly shorter in larger specimens; distance from tip of snout to last externally visible dorsal spine (S-LDS) negatively allometric, shorter than distance from tip of snout to last externally visible anal spine (S-LAS), negatively allometric; S-LAS minus S-LDS 19.1-30.8 (mean: 23.9) % HL expressing anterior position of origin of soft part of dorsal fin compared to origin of soft part of anal fin.

Dorsal spines, with spines increasing in size from first to last. One additional very short spine

Table 1. Morphometric and meristic data of holotype and paratypes of *Aethiomastacembelus shiloangoensis.*

	Shiloango holotype MRAC 11961	Shiloango paratype MRAC 11962	Shiloango paratype MRAC 11963	Shiloango paratype MRAC 174146
Standard length (mm)	125	126	130	144
In percents of HL				
Snout length	24.2	25.3	25.8	27.0
Eye diameter	14.3	14.5	12.9	11.3
Minimum interorbital distance	3.8	3.8	3.6	2.9
Rostral appendage length	9.3	11.3	9.3	8.3
Postorbital length	65.4	65.6	65.5	66.2
Angle of jaws to dorsal edge of pectoral fin base	74.2	72.0	73.2	73.0
Posterior tip of preorbital spine to dorsal point of pectoral fin base	–	–	–	–
Upper corner of gill slit to pectoral fin origin	6.9	7.5	7.2	6.4
Upper jaw length	26.9	27.4	26.8	26.5
Lower jaw length	22.5	22.6	22.2	22.1
Pectoral-fin length	25.3	29.0	25.8	25.0
Dorsal point of pectoral fin base to anterior base of first dorsal spine	41.2	40.3	32.0	33.3
Ventral point of pectoral fin base to anterior base of first dorsal spine	36.3	33.9	26.3	29.4
Posterior edge of pectoral fin to anterior base of first dorsal spine	9.9	5.9	3.1	2.5
Angle of jaws to eye	15.4	14.0	13.4	13.2
Angle of jaws to posterior external nare	14.8	14.5	14.4	14.7
Anterior border posterior external nare to eye	6.0	5.4	6.7	5.4
In percents of SL				
Head length	14.6	14.8	14.9	14.2
Snout to first dorsal spine	20.3	20.4	19.8	19.4
Snout to last externally visible dorsal spine	51.6	51.2	51.4	50.5
Snout to first anal spine	51.5	51.3	50.7	50.1
Snout to last externally visible anal spine	56.1	54.8	54.2	53.5
Preanal length	49.7	49.2	48.9	48.5
Postanal length	48.8	48.9	49.8	50.6
Body depth at anus	6.7	6.7	6.7	6.7
Meristics				
Predorsal vertebrae	6	6	6	6
Abdominal vertebrae	32	32	32	31
In-between vertebrae	+2	+2	+1	+1
Caudal vertebrae	54	54	55	57
Total vertebrae	86	86	87	88
Dorsal spines	24+1	25+1	26+1	25+1
Anal spines	2+1	2+1	2+1	2+1
Dorsal fin rays	72	74	76	85
Anal fin rays	66	72	79	79
Caudal fin rays	10	12	12	9
Preopercular spines	0L/0R	0L/0R	0L/0R	0L/0R

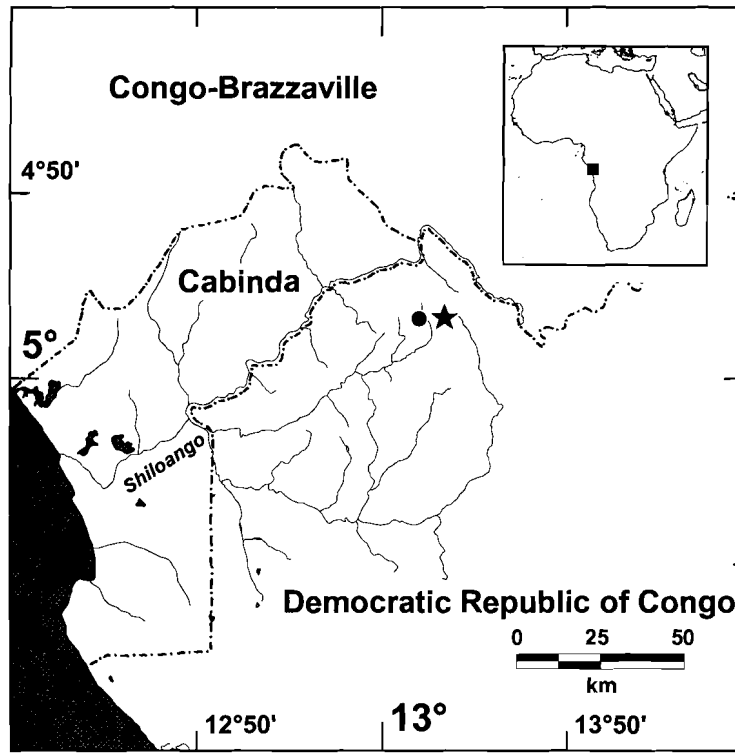

Fig. 2. Distribution of *Aethiomastacembelus shiloangoensis*. ★ type locality; ● other locality.

hidden under skin, anterior to base of first dorsal-fin ray. Two externally visible anal spines, first one smaller than second. One additional very short spine, hidden under skin, situated anterior to base of first anal-fin ray. First anal pterygiophore well developed, supporting first and second anal spine, and only pterygiophore supporting two spines.

Neural spine supporting pterygiophore of last externally visible dorsal spine and haemal spine supporting pterygiophore of first anal spine situated on two different vertebrae, separated by one or two vertebrae (named in-between vertebrae hereafter). Vertebra with neural spine supporting pterygiophore of last externally visible dorsal spine always in front of vertebra with haemal spine supporting first anal spine.

Neither preopercular nor preorbital spines.

Coloration (in alcohol) (Fig. 1a). Colour pattern of holotype (MRAC 19961) and two paratypes (MRAC 19962-19963) not optimally preserved. Following description based mainly on third paratype (MRAC 174116).

Uniformly light brown overall background colour becoming lighter ventrally. Dark brown band originating at base of rostral appendage, passing through eye, fading further posteriorly. Mediodorsally, a series of dark brown to black spots extending along dorsal fin base. Ventral surface of head, belly and abdomen yellowish white with no spots or markings. Distal part of dorsal, caudal and anal fins white to transparent. Basal part of dorsal, caudal and anal fins brownish. Proximal part of dorsal and anal fin with a series of large, dark brown, spots; partially also situated on tail. Head, sides and tail uniformly brown. Pectoral fin white with no spots or markings.

Distribution. *Aethiomastacembelus shiloangoensis* is only known from the Shiloango River basin (Democratic Republic of Congo) (Fig. 2).

Etymology. Named after the Shiloango River basin (Democratic Republic of Congo) to which this species seems to be endemic.

Discussion. Generic status. Travers (1984a-b) proposed a new classification of the African Mastacembelidae. However, the generic position of many of these species subsequently was found to be confused (Seegers, 1996; Vreven & Teugels, 1996, 1997).

Two main reasons can be given for the present confusion: (1) many transfers of species, from one genus to the other, were actually done by Travers without any clear justification; and (2) the diagnosis of a genus is in many cases in contradiction with the character states observed in several species within the genus. The latter is also discussed by Seegers (1996) who points out that the *frenatus* group with less than 100 soft dorsal- and anal-fin rays is actually put by Travers (1992b) in *Caecomastacembelus* which is defined in the same publication as usually having more than 100 dorsal- and anal-fin rays.

Vreven & Teugels (1996) discussed the problems of the type material of both genera. This study revealed several inaccuracies and contradictions in the diagnoses of both genera.

Travers (1988) synonymised *Afromastacembelus* Travers (1984b) with *Caecomastacembelus* Poll, 1958 as *A. tanganicae* (Günther, 1893) the type species of *Afromastacembelus* turned out to be a member of the genus *Caecomastacembelus*. Further, he designated *A. marchei* (Sauvage, 1879), a species he previously placed in *Caecomastacembelus* (Travers, 1984b), as the type species of the new genus *Aethiomastacembelus* comprising the remaining species of *Afromastacembelus* (see Travers, 1988). Yet, cleared and stained specimens of *A. marchei* present one of the two synapomorphic characters (no toothplate on pharyngobranchial 2) presented by Travers (1984b) to support the monophyly of *Caecomastacembelus*. Further, the validity of the second synapomorphy (less than 5 preopercular sensory canal pores) of *Caecomastacembelus* can be questioned as well. Indeed, Travers (1984b: 119) himself placed several species with only 4 preopercular sensory canal pores in *Afromastacembelus* and species with 5 preopercular canal pores in *Caecomastacembelus*. As a result: (1) the monophyly of both *Aethiomastacembelus* and *Caecomastacembelus* is not well supported at present and (2) both genera are ill-defined. The generic level systematics of the African Mastacembelidae needs thorough revision.

At the moment *A. shiloangoensis* is best placed in *Aethiomastacembelus*. For an overview of the diagnostical characters of both genera I refer to Travers (1988, 1992a-b) and Vreven & Teugels (1996: table 3). However, for the following characters *A. shiloangensis* does not entirely fit the diagnosis of *Aethiomastacembelus*: 9-12 caudal fin rays (10-12 in *Aethiomastacembelus*; 8-10 in *Caecomastacembelus*); snout blunt (tendency to have a pointed snout in *Aethiomastacembelus*; tendency to have a blunt snout in *Caecomastacembelus*); origin of first dorsal spine posterior to pectoral fin when flat against lateral wall of body (dorsal or just posterior to pectoral fin in *Aethiomastacembelus*; posterior to pectoral fin in *Caecomastacembelus*); and body depth even for most of length (greatest midway along length in *Aethiomastacembelus*; even for most of length in *Caecomastacembelus*). The diagnostical value of the position of the origin of the first dorsal spine compared to the position of the posterior edge of the pectoral fin when flat against the body wall is flawed as is the diagnostic value of some other characters proposed by Travers (1988, 1992a-b) (see Vreven & Teugels, 1996: table 5). Indeed, in the type specimens of *C. brichardi* Poll, 1958 (type species of the genus *Caecomastacembelus*), the origin of the first dorsal spine is situated anterior to the posterior edge of the pectoral fin which agrees better with the character state defining *Aethiomastacembelus*.

Affinities. *Aethiomastacembelus shiloangoensis* belongs to the *A. paucispinis* species-complex, as defined by Travers (1992a-b). He referred to seven *Aethiomastacembelus* species within this species-complex but only listed six: *A. liberiensis*, *A. nigromarginatus*, *A. paucispinis*, *A. praensis*, *A. sanagali* and *A. sexdecimspinus*.

The *A. paucispinis* species-complex, as defined by Travers (1992a-b), is characterised by an anterior development of the soft part of dorsal fin, which extends well beyond the anterior origin of the soft part of anal fin. Associated with this anterior development there is a low number of dorsal spines and an extremely high number of dorsal fin rays (see also Roberts & Travers, 1986: 110, 112).

Within the Lower Guinea ichthyofaunal province [from coastal river basins from the Cross (Nigeria/Cameroon) to the Shiloango (Cabinda – Angola/Democratic Republic of Congo) in the south] I temporarily recognise 11 other Mastacembelidae species. Meristics for all recognised Lower Guinea ichthyofaunal province species are given in Table 2.

Aethiomastacembelus shiloangoensis is distinguished from *A. sexdecimspinus* by a greater dorsal spine number (Table 2) and a correlated longer distance from tip of snout to last, externally visible, dorsal spine (50.5-51.6 % SL, mean 51.2, vs. 37.1-44.2, mean 40.9).

Aethiomastacembelus shiloangoensis is distinguished from *C. cryptacanthus* (Günther, 1867) and *C. loennbergii* (Boulenger, 1898) (probably a synonym of *C. cryptacanthus*) by a shorter distance between posterior edge of pectoral fin and base of first dorsal spine (2.5-9.9 % HL, mean 5.3, vs. 17.4-89.3, mean 52.2), a correlated a lower predorsal vertebrae number (Table 2), and the absence of preopercular spines (vs. 2-4, median 2).

Aethiomastacembelus shiloangoensis is distinguished from *C. niger* (Günther, 1879), *C. goro* (Boulenger, 1902), *C. batesii* (Boulenger, 1911), and *C. brevicauda* (Boulenger, 1911) (latter three probably synonyms of *C. niger*) by a shorter distance between posterior edge of pectoral fin and base of first dorsal spine (2.5-9.9 % HL, mean 5.3, vs. 24.5-85.8, mean 52.5), a correlated lower predorsal vertebrae number (Table 2), and origin of soft part of dorsal fin clearly anterior to origin of soft part of anal fin (vs. origin of both fins more or less situated above each other or origin of latter posterior to origin of former) [i.e. distance from tip of snout to last externally visible anal spine (S-LAS) minus distance from tip of snout to last externally visible dorsal spine (S-LDS): 19.1-30.8 % HL, mean 23.9, vs. (-28.6)-7.5, mean (-10.7)]. *Caecomastacembelus niger* is the only other mastacembelid known from the Shiloango River basin.

Aethiomastacembelus shiloangoensis is distinguished from *C. seiteri* (Thys van den Audenaerde, 1972), *A. marchei* and *C. sclateri* (Boulenger, 1903) (probably a synonym of *A. marchei*) by having a shorter distance from tip of snout to last, externally visible, dorsal spine (50.5-51.6 % SL, mean

Table 2. Meristic characters of the Lower Guinea mastacembelid species. Only type specimens for probable synonyms: *C. sclateri*, *C. loennbergii*, *C. goro*, *C. batesii* and *C. brevicauda*. Abbreviations: DS, dorsal spines; SDFR, soft dorsal fin rays; SAFR, soft anal fin rays; SDFR-SAFR, difference between number of soft dorsal fin rays and soft anal fin rays; SCFR, soft caudal fin rays; PV, predorsal vertebrae; AV, abdominal vertebrae; IV, in-between vertebrae; CV, caudal vertebrae; TV, total vertebrae number; [ ], median values.

	DS	SDFR	SAFR	SDFR-SAFR	SCFR	PV	AV	IV	CV	TV
A. sexdecimspinus	14+1-18+1 [16+1]	112-132 [122]	81-98 [92/93]	(+25)-(+34) [+31]	9-12 [10]	6-7 [6]	30-33 [32]	(+9)-(+12) [+11]	54-61 [57]	85-92 [89]
A. sanagali	23+1-25+1 [25+1]	89-103 [97]	80-93 [87]	(+1)-(+17) [+11]	11-13 [12]	5-7 [6]	32-33 [33]	(+1)-(+4) [+2]	54-57 [56]	86-90 [88]
C. seiteri	29+1-32+1 [31+1]	84-98 [93/94]	78-89 [86]	(+3)-(+10) [+7]	8-10 [10]	5-6 [6]	36-38 [38]	0-(+1) [0]	54-57 [55]	91-94 [93]
A. shiloangoensis	24+1-26+1 [25+1]	72-85 [75]	66-79 [75/76]	(-3)-(+6) [+4]	9-12 [11]	6-6 [6]	31-32 [32]	(+1)-(+2) [(+1)-(+2)]	54-57 [54/55]	86-88 [86/87]
A. marchei	22+1-27+1 [24+1]	60-85 [76]	61-83 [72]	(-5)-(+12) [+4]	8-14 [11]	4-6 [5]	26-33 [30]	0-(+1) [0]	42-53 [48]	71-85 [78]
C. sclateri	26+1-27+1 [26+1]	76-79 [77]	74-75 [74]	2-5 [2-3]	11-12 [11]	5 [5]	32 [32]	0 [0]	52-53 [52-53]	84-85 [84-85]
C. cryptacanthus	23+1-30+1 [26+1]	93-135 [112]	91-129 [110]	(-8)-(+14) [+3]	6-10 [8]	8-13 [10]	33-41 [36]	0-(+2) [0]	61-74 [67]	95-112 [103]
C. loennbergii	27+1-30+1 [28+1-29+1]	123	125	(-2)	6	10-11 [10]	38-40 [39]	0-1 [0]	69-72 [72]	109-111 [110]
C. niger	24+1-33+1 [30+1]	64-88 [76]	68-86 [77]	(-9)-(+8) [-1]	7-10 [8]	9-14 [11]	33-42 [40]	(-2)-(+1) [0]	50-59 [55]	88-98 [94]
C. goro	28+1-32+1 [30+1]	74-81 [78]	74-85 [80]	(-6)-(+1) [-2]	7 [7]	10-12 [11]	38-41 [40]	0 [0]	54-57 [56]	93-97 [96]
C. batesii	31+1-32+1 [32+1]	71-75 [75]	66-77 [76]	(-3)-(+5) [-2]	8 [8]	10-12 [11]	40-41 [41]	0 [0]	55-57 [57]	95-98 [97]
C. brevicauda	29+1-33+1 [31+1]	69-80 [75]	70-82 [77]	(-7)-(+2) [-2]	7-10 [8]	10-12 [11]	39-42 [40]	(-1)-(+1) [0]	54-59 [55]	94-98 [96]

51.2, vs. 55.6-59.9, mean 58.2, in *C. seiteri* and 53.9-62.2 % SL, mean 57.1, in *A. marchei*). Further, *A. shiloangoensis* has no preopercular spines whereas *C. seiteri* has 2-3 (median: 2-3), *A. marchei* has 2-3 (median: 2) and *A. sanagali* has 2-4 (median: 2). In addition, *A. shiloangoensis* lacks preorbital spines whereas *C. seiteri*, *A. marchei* and *A. sanagali* always have one strong preorbital spine on each side of the head.

Comparative material. Examined type material listed below. For a complete list of comparative material see Vreven (2001).

Aethiomastacembelus marchei: MNHN A-0895, 2 syntypes, 133-141 mm SL; Gabon: chute de Doumé, pays des Adouma, haut Ogôoué. *A. sanagali*: MRAC 178715, holotype, 178 mm SL; MRAC 178716, 1 paratype, 144 mm SL; Cameroon: Nachtigal, riv. Sanaga, au bord du bac.

A. sexdecimspinus: CAS 51558, holotype, 147 mm SL; CAS 51559, 2 paratypes, 94-154 SL; BMNH 1985.10.4:2, 1 paratype, 97 SL; Cameroon: from high gradient rapids along forest tributary off mainstream Cross River at Bamenda-Memfe road near Widekum. – CAS 51560, 1 paratype, 83 mm SL; MNHN 1986-0396, 1 paratype, 77 mm SL; Cameroon: 5-15 km downstream from Mamfe. – MRAC 84-04-P-1, 1 paratype, 89 mm SL; Cameroon: from tributary of Cross or Manyu River near Widekum.

Caecomastacembelus batesii: BMNH 1911.5.30.37, BMNH 1903.7.28:179-181, BMNH 1908.5.30:158-159, 5 of 6 syntypes (all in one jar), 182-313 mm SL; BMNH 1907.5.24:246, syntype (skeleton); Cameroon: Ja River at Bitye. *C. brevicauda*: BMNH 1903.7.28:68-72, 5 syntypes, 84-146 mm SL; Cameroon: Kribi River. – BMNH 1904.7.1:178-180, 3 syntypes, 155-170 mm SL; Cameroon: Ja River at Bitye. – BMNH 1906.5.28:193-196, 4 syntypes, 122-137 mm SL; Cameroon: Zima Country. – BMNH 1909.7.9:90-92, 3 syntypes, 107-193 mm SL; Cameroon: Bumba River at Assobam. *C. cryptacanthus:* BMNH 1866.6.26:11, holotype, 222 mm SL; Cameroon. – BMNH 1908.5.30:189, holotype of *C. longicauda*, 302 mm SL; Cameroon: Akok, Kribi River. *C. goro*: BMNH 1901.12.26:66-67, 2 syntypes, 169-237 mm SL; MRAC 1203 a-e, 5 syntypes, 146-347 mm SL; Banzyville. *C. loennbergii*: BMNH 1898.6.27:1, syntype, 109 mm SL; Cameroon: Bonge. – ZMUU 602, 3 syntypes, 41-60 mm SL; no data, probably same data as BMNH syntype. *C. niger*: MNHN A 0967, holotype, 191 mm SL; Gabon: riv. Ogooue, bassin Ogooue. – BMNH 1867.5.3:20, 1 syntype of *C. flavomarginatus*, 259 mm SL; BMNH 1872.1.27:1, 2 syntypes of *C. flavomarginatus*, 232-293 mm SL; Gabon. *C. sclateri*: BMNH 1903.7.28:73-74, 4 syntypes, 163-207 mm SL; Cameroon: near Efulen. *C. seiteri*: MRAC 178714, holotype, 212 mm SL; Cameroon: Nachtigal, riv. Sanaga.

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Literature cited

David, L. & M. Poll. 1937. Contribution à la faune ichthyologique du Congo belge: collections du Dr. H. Schouteden (1924-1926) et d'autres récolteurs. Ann. Mus. Congo Belge, Zool., Sér. 1, 3: 189-294.

Lévêque, C., D. Paugy & G. G. Teugels. 1990. Faune des poissons d'eaux douces et saumâtres de l'Afrique de l'Ouest. Tome 1. MRAC, Tervuren & ORSTOM, Paris. Collection Faune Tropicale, 28: 1-384.

Poll, M. 1957. Les genres des poissons d'eau douce de l'Afrique. Ann. Mus. Congo Belge, Sci. Zool, Sér. 8, 54: 1-191.

Roberts, T. R. & R. A. Travers. 1986. *Afromastacembelus sexdecimspinus*, a new species of mastacembelid spiny-eel from rapids in the Cross River basin, Cameroon. Cybium, 10: 105-114.

Seegers, L. 1996. The fishes of the Lake Rukwa Drainage. Ann. Mus. R. Afr. Cent., Sci. Zool., 278: 1-407.

Skelton, P. H. 1993. A complete guide to the freshwater fishes of Southern Africa. Southern Book Publishers, Halfway House, 388 pp.

Travers, R. A. 1984a. A review of the Mastacembeloidei, a suborder of synbranchiform teleost fishes, Part I: Anatomical descriptions. Bull. Br. Mus. Nat. Hist., Zool., 46: 1-133.

— 1984b. A review of the Mastacembeloidei, a suborder of synbranchiform teleost fishes, Part II: Phylogenetic analysis. Bull. Br. Mus. Nat. Hist., Zool., 47: 83-150.

— 1992a. *Caecomastacembelus taiaensis* and *Aethiomastacembelus praensis*, two new species of Mastacembelid spiny-eels from West Africa. Ichthyol. Explor. Freshwaters, 2: 311-340.

— 1992b. Mastacembelidae. Pp. 848-857 in C. Lévêque, D. Paugy & G. G. Teugels (eds.), Faune des poissons d'eaux douces et saumâtres de l'Afrique de l'Ouest. Tome 2. ORSTOM, Paris & MRAC, Tervuren. Collection faune tropicale 28.

Travers, R. A., G. Eynikel & D. F. E. Thys van den Audenaerde. 1986. Mastacembelidae. Pp. 415-427 in J. Daget, J.-P. Gosse & D. F. E. Thys van den Audenaerde (eds.), Check-list of the freshwater fishes of Africa. Vol. 2. ISNB, Bruxelles, MRAC, Tervuren & ORSTOM, Paris.

Tshibwabwa, S. M. 1997. Systématique des espèces africaines du genre *Labeo* (Teleostei, Cyprinidae) dans les régions ichthyogéographique de basse-Guinée et du Congo. Tome II. Thèse de doctorat, Presses Universitaires de Namur, 303-530.

Vreven, E. J. 2001. A systematic revision of the African spiny-eels (Mastacembelidae; Synbranchiformes). Volume I-VII. PhD thesis, Katholieke Universiteit Leuven, Faculty of Sciences, 1-2312.

Vreven, E. J. & G. G. Teugels. 1996. Description of a new mastacembelid species Synbranchiformes; Mastacembelidae) from the Zaïre River Basin in Africa. Copeia, 1996: 130-139.

— 1997. *Aethiomastacembelus traversi*, a new spiny-eel from the Zaïre River basin, Africa (Synbranchiformes: Mastacembelidae). Ichthyol. Explor. Freshwaters, 8: 81-87.

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