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## Rehabilitation of *Bryconaethiops yseuxi* Boulenger, 1899 (Characiformes: Alestidae) from the Congo River basin, Africa

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### Abstract

*Bryconaethiops yseuxi* Boulenger, 1899, originally described from “Haut Congo”, is rehabilitated. The species was synonymized, successively with *B. microstoma* (Günther, 1873) and *B. macrops* Boulenger, 1920, subsequently rehabilitated, and then again considered as a junior synonym of *B. microstoma*. *Bryconaethiops yseuxi* is here considered as a valid species, easily distinguished from all other *Bryconaethiops* species by its small size (maximum: 72.2 mm SL), 7.5 rows of scales between the dorsal-fin origin and the lateral line; 11–13/1/8–12 gill rakers on the first gill arch and long dorsal-fin and anal-fin bases, respectively, 15.7–17.6% of SL and 22.7–25.9% of SL.

**Keywords:** *Pisces*, *Alestidae*, *Bryconaethiops*, *Bryconaethiops yseuxi*, *Lower Congo River basin*, *rehabilitation*

### Introduction

The genus *Bryconaethiops* Günther, 1873 is a member of the family Alestidae (formerly classified as Alestinae within Characidae *sensu* Greenwood et al., 1966) (Paugy 2003; Paugy and Schaefer forthcoming). The most important features of the family are: the presence of a strong oral dentition; the presence of an adipose fin (exceptionally absent) (Paugy 2003); and the presence of cycloid scales (Mamonekene and Teugels 1993). Although Paugy and Schaefer (forthcoming) rejected the subfamily-level classification of the Alestidae, they maintained the present tribal arrangement of the genera as a matter of practical convenience, while recognizing the inadequate, artificial nature of this interim classification. Three major groups can be recognized within the family that are differentiated mainly on the basis of tooth morphology: the genus *Hydrocynus* Cuvier,

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1817 (six species) characterized by strong caniniform, mostly conical, teeth; the Alestiini *sensu stricto* (45 species) including the genera *Alestes* Müller and Troschel, 1844; *Brycinus* Valenciennes, 1849, and *Bryconaethiops* Günther, 1873, characterized by more modest pluricuspid teeth and molariform teeth in the inner row of the premaxilla; and the Petersiini (16 genera, 59 species), characterized by small size, reduced pluricuspid teeth, and non-molariform teeth in the inner row of the premaxilla.

The genus *Bryconaethiops* is distinguished from all other alestid genera by the following unique combination of characters: three rows of premaxillary teeth (Paugy 1990, 2003; Mamonekene and Teugels 1993); the eyes covered with a well-developed adipose eyelid; and a pronounced sexual dimorphism in the unpaired fins, a convex anterior margin of the anal fin and a filamentous elongation of the dorsal-fin rays in adult males (Paugy and Schaefer forthcoming).

At present, this genus contains four valid species: *B. microstoma* Günther, 1873 known from several river basins of the Lower Guinea province *sensu* Roberts, 1975 and the Lower and Middle Congo basin [(Pellegrin 1928; Daget 1984; Paugy and Schaefer forthcoming); but not in Lake Kivu (Snoeks et al. 1997)]; *B. boulengeri* Pellegrin, 1900 known from the Congo and Ogowe basin (Daget 1984) [the holotype is the only specimen known to date from the Ogowe River basin; the origin of the holotype is questioned as according to Paugy and Schaefer (forthcoming) the species is absent from Lower Guinea]; *B. macrops* Boulenger, 1920 known from the Lower Guinea province (Paugy and Schaefer forthcoming) and the Congo basin (Daget 1984), including the Oubangui and Sangha basins (Paugy and Schaefer forthcoming), and *B. quinquesquamae* Teugels and Thys van den Audenaerde, 1990 present in a few coastal basins of the Lower Guinea province and the Niger delta (Paugy 2003).

While studying a recent collection of fishes from the Djoué River, a right bank affluent of the Lower Congo River, we were unable to attribute some *Bryconaethiops* specimens to one of these four valid species. We identified them as *B. yseuxi*, presently considered a junior synonym of *B. microstoma*. Based on a detailed study of more material, including the types, *B. yseuxi* is revalidated below.

## Material and methods

All available type specimens of the nomino-typical *Bryconaethiops* species were examined. The data on the holotype of *B. microstoma* var. *habererii* Steindachner, 1914 were obtained from the original description of the species and through the help of Dr A. Lamboj who examined the specimen. In total we examined 37 *B. microstoma* specimens, 23 *B. yseuxi* specimens, 15 *B. boulengeri* specimens, 21 *B. macrops* specimens, and eight *B. quinquesquamae* specimens mostly from the MRAC collections.

Institutional abbreviations follow Leviton et al. (1985). Other abbreviations are as follows: SL, standard length; HL, head length.

On each specimen eight meristics and 19 morphometrics were taken. A short description is given below. For an illustration of the meristics taken see Tshibwabwa and Teugels (1995). For an illustration of the morphometrics taken see Teugels and Thys van den Audenaerde (1990).

## Meristics

Number of gill rakers: total number of gill rakers counted on the first branchial arch [formula: number of gill rakers on the lower part (hypo- and ceratobranchial)/one gill raker on articulation/number of gill rakers on the upper part (epibranchial)]. Caudal peduncle scales:

number of scales counted around the caudal peduncle. Lateral line scales: number of pored scales counted along the lateral line, including the scales on the caudal fin. Longitudinal line scales: number of scales along the longitudinal line, including the scales on the caudal fin. Scales above the lateral line: number of scales from the anterior origin of the dorsal fin, following an antero-posterior line up to the lateral line with the lateral line scale not included. Scales below the lateral line: number of scales from the origin of the pelvic fin, following an antero-posterior line up to the lateral line with the lateral line scale not included. Dorsal-fin rays: number of simple fin rays (roman number) + number of branched fin rays. Anal-fin rays: number of simple fin rays (roman number) + number of branched fin rays.

### *Morphometrics*

All measurements are point-to-point measurements unless otherwise noted. Standard length (SL): distance between anterior border of snout and caudal-fin base at articulation. Snout length: distance between anterior border of snout and anterior border of eye (bone to bone). Eye diameter: distance between anterior and posterior border of eye (bone to bone). Interorbital distance: minimal distance between orbits (bone to bone). Head length (HL): distance between anterior border of snout and posterior bony border of operculum (bone to bone). Predorsal distance: distance between anterior border of snout and articulation of first dorsal-fin ray (bone to bone). Prepectoral distance: distance between anterior border of snout and articulation of first pectoral-fin ray (bone to bone). Prepelvic distance: distance between anterior border of snout and articulation of first pelvic-fin ray (bone to bone). Preanal distance: distance between anterior border of snout and articulation of first anal-fin ray (bone to bone). Dorsal-fin base length: distance between anterior and posterior base of dorsal fin. Anal-fin base length: distance between anterior and posterior base of anal fin. Dorsal–adipose distance: distance between posterior base of dorsal fin and anterior base of adipose fin. Dorsal-fin length: distance between articulation of first dorsal-fin ray with body and distal end of longest dorsal-fin ray. Anal-fin length: distance between articulation of first anal-fin ray with body and distal end of longest anal-fin ray. Pectoral-fin length: distance between articulation of first pectoral-fin ray with body and distal end of longest pectoral-fin ray. Pelvic-fin length: distance between articulation of first pelvic-fin ray with body and distal end of longest pelvic-fin ray. Caudal peduncle length: horizontal distance between posterior base of adipose fin and caudal-fin base at articulation. Caudal-peduncle depth: minimum vertical depth of caudal peduncle. Body depth: maximum vertical depth of fish at anterior base of dorsal fin.

### **Historical overview**

The genus *Bryconaethiops* was described by Günther in 1873 based on the types of *B. microstoma* from “the River Congo” [Boma, Lower Congo River basin (Boulenger 1909)]. A second species, *B. mocquardianus* (Thomiot, 1886) was described based on a single specimen originating from “San Benito” (Equatorial Guinea) but placed in synonymy with *B. microstoma* by Boulenger (1909). Boulenger (1899) described *B. yseuxi*, originating from “Haut-Congo”. He distinguished *B. yseuxi* from *B. microstoma* by the elongation of the dorsal-fin rays and by the presence of an additional series of scales between the origin of the dorsal fin and the lateral line, i.e. 7.5 in *B. yseuxi* versus 6.5 in *B. microstoma*. A fourth species, *B. boulengeri* was described by Pellegrin (1900) from “Adoumas (Ogooué)”. Steindachner (1914) described *B. microstoma* var. *habereri* based on a single specimen originating from “Dscha, einem zuflusse des Sanga” (Cameroon), which Boulenger (1916) synonymized with *B. yseuxi*.

In his catalogue, Boulenger (1916) noted that *B. yseuxi* is perhaps not specifically distinct from *B. microstoma*. According to Roberts and Stewart (1976), Boulenger (1916) realised that sexual dimorphism in *Bryconaethiops* is expressed by the filamentous elongation of the dorsal fin, one of the key characters to separate *B. yseuxi* from *B. microstoma*. Nichols and Griscom (1917) found several *Bryconaethiops* specimens with filamentous dorsal-fin rays and others with an intermediate character state. They concluded that *B. yseuxi* is a synonym of *B. microstoma*.

Boulenger (1920) described *B. macrops* [from Bafwasende, Avakubi, Bosabangi and Fundi (Democratic Republic of Congo)], characterized mainly by the eye diameter which is always longer than the snout length and comprises 2.5 times the head length. He considered the species to be close to *B. microstoma* and *B. yseuxi*.

Holly (1930) recognized *B. yseuxi* as a valid species. However, is it not clear if Holly (1930) was aware of the synonymy proposed by Nichols and Griscom (1917). In his reference list, Holly (1930) mentioned the paper but nevertheless reported both diagnostic characters of *B. yseuxi* as given by Boulenger (1899). Indeed, the filamentous elongation of the dorsal-fin rays was still reported as a diagnostic character for *B. yseuxi* despite the results of Nichols and Griscom (1917).

Without studying the holotype of *B. yseuxi* (see Roberts and Stewart 1976), Poll (1939) confirmed the synonymy of this species not with *B. microstoma* but with *B. macrops* [a literal translation of Poll's (1939) statement reads "not only with *B. microstoma* but also with *B. macrops*" (according to Roberts and Stewart (1976) "*B. microstoma* or *B. macrops*")]; this is probably a linguistic lapsus of Poll (1939) as the synonymy is discussed under his description of *B. macrops* and in reference to *B. macrops*] as he had found *Bryconaethiops* specimens belonging to *B. macrops* and previously identified as *B. yseuxi*.

Poll and Gosse (1963) rehabilitated *B. yseuxi* based on numerous specimens deposited at the MRAC. Roberts and Stewart (1976) documented the differences between *B. yseuxi* and the other known *Bryconaethiops* species: *B. yseuxi* had 11–13 gill rakers on the lower part of the first branchial arch (versus >15 in *B. microstoma*, *B. macrops*, and *B. boulengeri*), a maximum size of 70 mm SL (versus >109 mm SL), and a different position and shape of the teeth in the upper jaw.

Daget (1978), in his "Contribution à la faune de la République Unie de Cameroun. Poissons du Dja, du Boumba et du Ngoko", without having consulted Poll and Gosse (1963) and Roberts and Stewart (1976), referred to *B. yseuxi* as a synonym of *B. macrops*. Paugy (1984) also referred to *B. yseuxi* as a synonym of *B. microstoma*, without reference to the publication of Roberts and Stewart (1976). Since then, in various reference works such as the Eschmeyer's Catalog of fishes online ([www.calacademy.org/research/ichthyology/catalog/fishcatsearch.html](http://www.calacademy.org/research/ichthyology/catalog/fishcatsearch.html)) and Fishbase (Froese and Pauly 2006), *B. yseuxi* is considered a junior synonym of *B. microstoma*. As a result of the latter synonymy, at the present, *B. microstoma* var. *habereri* is considered a synonym of *B. microstoma*.

### ***Bryconaethiops yseuxi* Boulenger, 1899**

(Figures 1, 2)

Holotype: BMNH 1899.6.27:38; Upper Congo. Purchased by Brussels University (69.3 mm SL).

*Note.* The type locality of *B. yseuxi* is "Haut Congo" (Upper Congo), an old term for all localities situated on the Congo River basin above Matadi (05°49'S, 13°27'E) (D. F. E. Thys van den Audenaerde, personal communication).

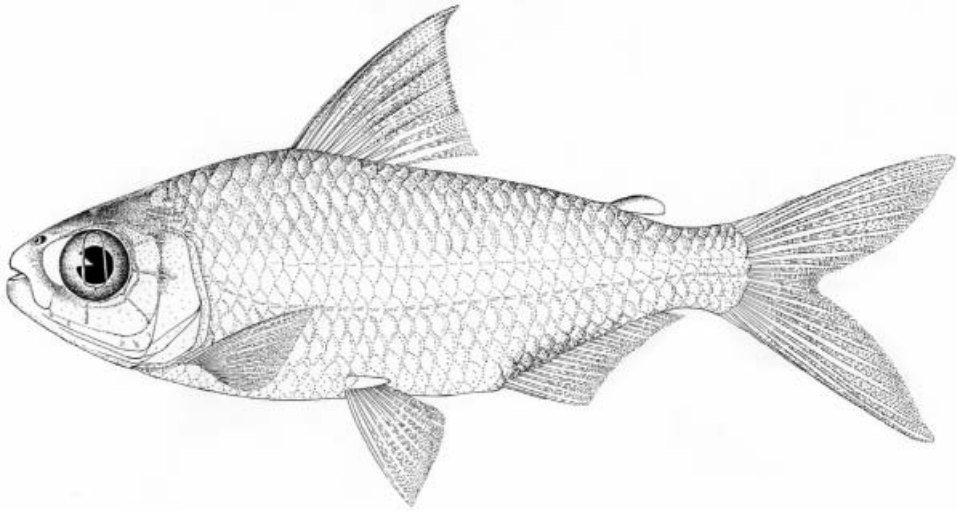


Figure 1. *Bryconaethiops yseuxi* Boulenger, 1899 (female), MRAC 12076–77: “Stanley-Pool, Kinsuka”, 53.1 mm SL, coll. Congo Aquaria, 1959 [drawing by Mrs C. Kinnard (MRAC)].

### Diagnosis

*Bryconaethiops yseuxi* can be distinguished from all other known *Bryconaethiops* species based on the following unique combination of characters: a high number of scale rows between anterior origin of dorsal fin and lateral line [7.5 versus 6.5 or less (exceptionally 7.5) in other species]; a low number of gill rakers on the first gill arch [11–13/1/8–12 (total: 20–25) versus 13–21/1/12–18 (total: 26–40) in other species]; and long dorsal-fin and anal-fin bases (respectively 15.7–17.6% and 22.7–25.9% SL versus shorter, respectively 13.4–15.5% and 16.8–22.8% SL in other species).

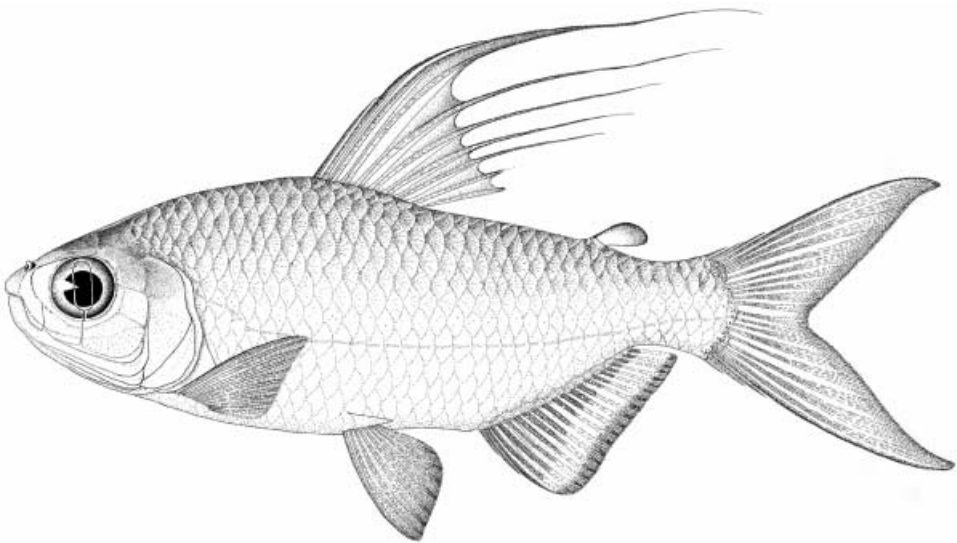


Figure 2. *Bryconaethiops yseuxi* Boulenger, 1899 (male), MRAC 125076–77 “Stanley-Pool, Kinsuka”, 71.1 mm SL, coll. Congo Aquaria, 1959 [drawing by Mrs C. Kinnard (MRAC)].

Description

Meristics and morphometrics of *B. yseuxi* are given in Table I and a comparison with the other valid nominal species of the genus is given in Table II. *Bryconaethiops yseuxi* is a small-sized species (maximum size 72.2 mm SL). A cleared specimen of 50.8 mm SL (MRAC 55237) had its skeleton already entirely ossified. Roberts and Stewart (1976) found a gravid female of only 47 mm SL.

Body deep and somewhat laterally compressed. Morphologically *B. yseuxi* is closest to small-sized *B. microstoma* specimens in overall shape of the body and the fins. Nevertheless, *B. yseuxi* specimens are always deeper bodied than *B. microstoma* specimens of the same size (Figure 3).

Mouth terminal; upper jaw with three rows of premaxillary teeth: external row composed of two small median teeth with a small lateral cusp at their outer side (exceptionally also an even smaller one at their inner side) (versus monoscupid teeth in other *Bryconaethiops* species); a median row with six or seven (mono-, bi-, or tricuspid) teeth; and an inner row

Table I. Meristics and morphometrics for *Bryconaethiops yseuxi* Boulenger, 1899.

	Holotype	Holotype + other specimens			
		Minimum	Maximum	<i>n</i>	Mean/median <sup>a</sup>
Morphometrics					
Standard length (mm)	69.3	39.1	72.2	23	60.3
As percentage of head length					
Snout length	23.3	22.0	26.5	23	23.9
Eye diameter	39.0	38.7	46.0	23	42.4
Interorbital width	34.0	34.0	39.5	23	36.9
As percentage of standard length					
Head length	27.2	25.5	28.0	23	26.8
Predorsal distance	45.5	43.3	47.1	23	45.4
Prepectoral distance	27.9	26.8	29.5	23	27.9
Prepelvic distance	53.0	50.9	54.3	23	52.8
Preanal distance	70.9	68.3	71.6	23	70.0
Dorsal-fin base length	16.4	15.7	17.6	23	16.5
Anal-fin base length	25.4	22.7	25.9	23	24.7
Dorsal–adipose distance	27.1	23.6	28.5	23	27.0
Dorsal-fin length	63.0	27.7	70.7	21	48.0
Anal-fin length	18.3	14.4	19.7	22	17.1
Pectoral-fin length	23.0	20.8	24.0	23	22.1
Pelvic-fin length	21.1	18.8	22.0	23	20.4
Caudal peduncle length	12.0	6.8	12.0	23	8.9
Caudal peduncle depth	11.8	10.6	11.8	23	11.1
Body depth	39.2	32.5	40.1	23	37.1
Meristics					
Gill rakers on first arch	12/1/12 (total 25)	11/1/8 (total 20)	13/1/11; 12/1/12 (total 25)	23	12/1/10 (total 23)
Lateral line scales	37	34	39	22	37
Longitudinal line scales	38	36	40	22	38
Scales above the lateral line	7.5	7.5	7.5	23	7.5
Scales below the lateral line	4.5	3.5	4.5	23	4.5
Caudal peduncle scales	12	12	12	22	12
Dorsal-fin rays	ii.8	ii.8	ii.8	23	ii.8
Anal-fin rays	iii.19	iii.18	iii.20	23	iii.19

<sup>a</sup>Mean for the morphometrics; median for the meristics.



Table II. Meristics and morphometrics of the valid *Bryconaethiops* species: minimum–maximum (Min–max).

	<i>B. yseuxi</i>		<i>B. microstoma</i>		<i>B. macrops</i>		<i>B. quinquessquamae</i>		<i>B. boulengeri</i>	
	Min–max <sup>a</sup>	<i>n</i>	Min–max <sup>a</sup>	<i>n</i>	Min–max <sup>a</sup>	<i>n</i>	Min–max <sup>a</sup>	<i>n</i>	Min–max <sup>a</sup>	<i>n</i>
<b>Morphometrics</b>										
Standard length (mm)	39.1–72.2 (60.3)	23	45.5–172.4 (80.4)	37	45.3–112.6 (88.1)	21	50.7–83.0 (70.8)	8	56.1–120.7 (77.2)	15
As percentage of head length										
Snout length	22.0–26.5 (24.0)	23	24.7–30.4 (27.9)	37	25.7–29.9 (27.6)	21	24.9–28.7 (26.6)	8	25.3–33.8 (29.2)	15
Eye diameter	38.7–46.0 (42.4)	23	31.4–43.8 (38.7)	37	35.6–46.8 (41.6)	21	37.6–42.8 (40.2)	8	32.4–42.6 (38.8)	15
Interorbital width	34.0–39.5 (36.9)	23	32.6–40.1 (35.6)	37	32.5–40.6 (37.0)	21	35.1–38.3 (36.4)	8	34.0–44.6 (38.1)	15
As percentage of standard length										
Head length	<b>25.5–28.0</b> (26.8)	23	27.6–30.9 (29.3)	37	27.3–31.3 (29.4)	21	26.2–29.5 (27.5)	8	<b>28.7–31.9</b> (30.4)	15
Predorsal distance	43.3–47.1 (45.4)	23	44.1–48.3 (46.1)	37	46.7–50.0 (48.0)	21	44.2–46.7 (45.6)	8	46.1–50.5 (48.7)	15
Prepectoral distance	26.8–29.4 (27.9)	23	27.2–30.8 (28.6)	37	27.1–31.1 (28.8)	21	24.3–28.2 (26.2)	8	27.8–30.0 (28.9)	15
Prepelvic distance	50.9–54.3 (52.8)	23	51.8–56.8 (54.1)	37	53.8–58.5 (55.6)	21	50.1–57.9 (52.8)	8	52.7–56.9 (55.0)	15
Preanal distance	68.3–71.6 (70.0)	23	69.3–76.1 (72.0)	37	71.6–75.9 (74.1)	21	69.3–75.7 (71.5)	8	70.5–74.3 (72.4)	15
Dorsal–adipose distance	26.0–28.5 (27.2)	23	25.5–30.4 (28.2)	37	26.1–30.2 (27.9)	21	27.8–29.1 (28.4)	8	24.5–29.6 (26.7)	15
Dorsal–fin base length	<b>15.7–17.6</b> (16.5)	23	<b>14.0–15.5</b> (14.8)	37	<b>14.0–15.5</b> (14.8)	21	<b>14.2–15.3</b> (14.7)	8	<b>13.4–14.7</b> (14.0)	15
Anal–fin base length	<b>22.7–25.9</b> (24.7)	23	17.6–22.8 (19.5)	37	<b>19.2–22.0</b> (20.9)	21	<b>17.9–20.6</b> (19.5)	8	<b>16.8–20.5</b> (18.7)	15
Dorsal–fin length	<b>27.7–70.7</b> (48.0)	21	23.0–58.2 (28.9)	29	28.0–65.0 (42.8)	15	<b>22.5–26.7</b> (24.5)	6	22.3–50.3 (30.2)	11
Anal–fin length	13.7–19.7 (17.0)	22	10.6–16.8 (12.8)	37	12.1–18.0 (14.7)	16	12.8–13.4 (13.0)	5	11.1–20.7 (14.3)	12
Pectoral–fin length	20.8–24.0 (22.1)	23	19.1–23.5 (20.2)	32	20.4–22.8 (21.6)	18	18.0–19.6 (18.7)	7	18.2–21.3 (19.9)	15
Pelvic–fin length	18.8–22.0 (20.4)	23	15.7–20.2 (17.4)	36	17.4–20.9 (19.2)	19	18.0–19.2 (18.6)	5	16.1–32.1 (19.1)	14
Caudal peduncle length	6.8–12.0 (8.9)	23	8.4–12.9 (11.1)	37	7.7–10.1 (9.0)	21	10.7–13.6 (12.3)	8	9.7–13.0 (11.1)	15
Caudal peduncle depth	10.6–11.8 (11.1)	23	9.4–11.0 (10.1)	37	9.6–11.4 (10.7)	21	9.3–10.1 (9.6)	8	9.7–12.1 (10.5)	15
Body depth	31.6–40.1 (36.8)	23	28.8–37.5 (31.9)	36	32.7–38.2 (35.3)	19	27.9–32.3 (29.8)	8	26.6–37.1 (32.0)	15
<b>Meristics</b>										
Dorsal–fin rays	ii.8 (ii.8)	23	ii.8 (ii.8)	37	ii.8 (ii.8)	21	ii.8 (ii.8)	8	ii.8 (ii.8)	14
Anal–fin rays	iii.18–20 (iii.19)	23	iii.17–19 (iii.18)	37	iii.16–19 (iii.18)	19	ii–iii.17–19 (ii.17)	6	iii.16–19 (iii.17)	15
Gill rakers on first arch	<b>11–13/1/8–12</b> (12/1/10) total	23	<b>15–21/1/12–18</b> (19/1/16) total	37	<b>16–20/1/13–16</b> (18/1/15) total	21	13–15/1/12–14 (14/1/13) total	8	<b>15–20/1/14–18</b> (18/1/15) total	15
	<b>20–25</b> (23)		<b>28–40</b> (36)		<b>31–36</b> (34)		<b>26–30</b> (28)		<b>32–39</b> (33)	
Scales on lateral line	34–39 (37)	22	34–41 (39)	33	33–36 (35)	19	35–39 (37)	8	35–37 (35)	13
Scales on longitudinal line	36–40 (38)	22	36–41 (39)	34	34–37 (36)	19	36–40 (38)	8	35–38 (36)	14
Scales above the lateral line	<b>7.5</b> (f 23)	23	<b>6.5</b> (f 36)–7.5 (f 1)	37	<b>6.5</b> (f 18)–7.5 (f 2)	20	<b>5.5</b> (f 8)	8	<b>5.5</b> (f 7)– <b>6.5</b> (f 7)	14
Scales below the lateral line	3.5–4.5 (4.5)	23	3.5–4.5 (3.5)	35	3.5–4.5 (3.5)	19	3.5 (3.5)	8	4.0–4.5 (4.0)	13
Scales around caudal peduncle	<b>12</b> (12)	22	12 (12)	35	<b>10</b> (10)	20	<b>10</b> (10)	8	12 (12)	15

<sup>a</sup>The numbers in parentheses are the mean for the morphometrics and the median or frequencies (f) for the meristics. Bold values are diagnostic for *B. yseuxi*.

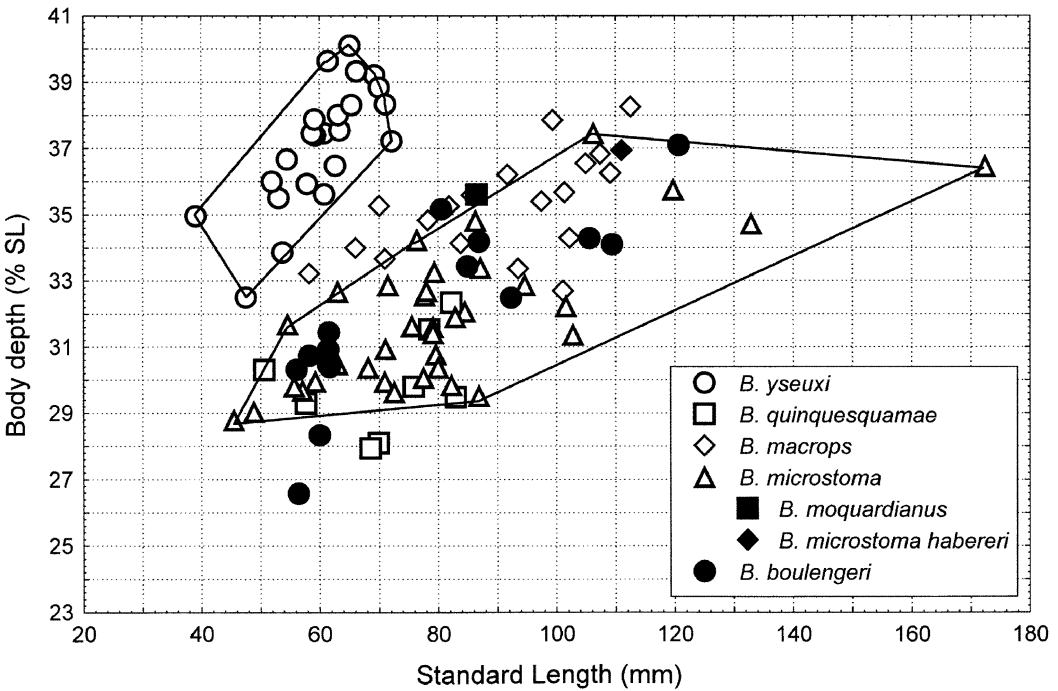


Figure 3. Scatterplot of the body depth (% SL) against the standard length (mm) for all examined specimens. Full lines enclosing the data for all *B. yseuxi* and all *B. microstoma* specimens examined, respectively.

of eight pluricuspid teeth [three (median teeth) to seven cusps] with their cusp on a median row and without an anterior cusp or row of cusps as generally found in the other *Bryconethiops* species. Lower jaw with an external series of six large pluricuspid teeth and an inner row of two median caniniform teeth. A bilateral asymmetric growth favouring the left side of the jaws was observed by Roberts and Stewart (1976). However, based on our observations we cannot confirm this statement.

There is a well-marked sexual dimorphism in the dorsal and anal fins. In males, all dorsal-fin rays, except the first and the last two, are filamentously elongated and can attain up to 70.7% SL. The distal border of the anal fin is straight in females, juveniles and immature specimens (Figure 1), but slightly convex anteriorly in males (Figure 2).

### Coloration

Head and body of live mature male specimens silvery with a pinkish hue on sides of body. Upper side of head green-olive. Humeral spot present but not well marked. Adipose-fin whitish transparent, blackish at base.

Anterior two-thirds of distal part of anal fin blackish; posterior third of distal part of anal fin transparent; distal part bordered by a whitish submarginal band; basal part of anal fin greyish black, transparent. Pelvic fins greyish black with a black distal border bordered by poorly delimited whitish submarginal band. Dorsal fin greyish white, transparent with blackish filaments. Pectoral and caudal fins whitish transparent. Distal margin of caudal fin black; base of upper and lower caudal fin lobe blackish resulting in a bilobed spot at base. Live colour pattern of females not observed.

After preservation, body yellowish white; darker above lateral line with scales above lateral line faintly dark brown on their basal part. Contrast between body parts above and below lateral line seem to fade away after time. Fins whitish, transparent in overall appearance; humeral spot not well distinguishable, or even regularly absent.

In most preserved males, anterior part of distal border of anal fin blackish and bordered submarginally by a whitish band. Pelvic fins dark with poorly delimited blackish distal border. Dorsal fin filaments blackish. Posterior margin of caudal fin black.

In preserved female and juvenile specimens, all fins pale to transparent and without whitish band on anal fin. Sometimes anal-fin base partially bordered by a fine dark brown band.

### Distribution

*Bryconaethiops yseuxi* is known only from the Lower Congo River basin, from Boma to Pool Malebo (formerly Stanley Pool) (Kinsuka, Kinshasa). The species is reported here for the first time from the Djoué River, a right bank affluent from the Lower Congo River (Figure 4).

*Bryconaethiops yseuxi* has been reported from the Dja River basin, Cameroon, by Boulenger (1916). However, these specimens (BMNH 1920-5-17:5-6) are *B. microstoma*. As already reported by Banister (1979), the *Bryconaethiops* specimens from the Ituri Bridge (BMNH 1975.6.20:172-174), still catalogued as *B. yseuxi*, also belong to *B. microstoma*.

### Etymology

Named after Dr E. Yseux, professor at the Université Libre de Bruxelles (Boulenger 1899).

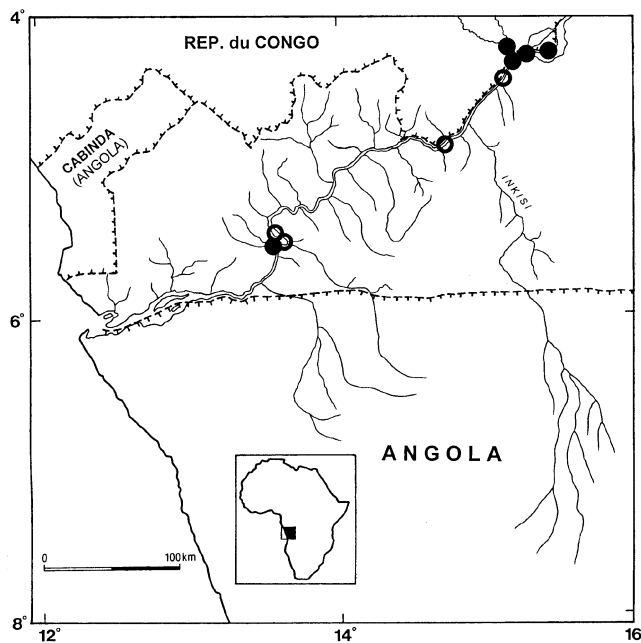


Figure 4. Distribution of *Bryconaethiops yseuxi* Boulenger, 1899. (●) Localities of examined specimens; (○) localities based on literature data (after Roberts and Stewart 1976).

*Other specimens examined*

*Democratic Republic of Congo*: MRAC 39457; Léopoldville ( $\sim 04^{\circ}18'S$ ,  $15^{\circ}18'E$ ); coll. Tinant, 1933 (66.2 mm SL). MRAC 48005; same data (59.2 mm SL). MRAC 55197–55200; same data (59.2–63.4 mm SL). MRAC 55237; same data (50.8 mm SL: cleared and stained specimen). MRAC 55238; same data (34.0 mm SL). MRAC 125076–125077; Stanley-Pool, Kinsuka ( $\sim 04^{\circ}20'S$ ,  $15^{\circ}13'E$ ); coll. Congo Aquaria, 1959 (53.1–71.1 mm SL). MRAC 125336–125337; Stanley-Pool ( $\sim 04^{\circ}15'S$ ,  $15^{\circ}25'E$ ); coll. P. Brichard, September 1958 (62.6–70.0 mm SL). MRAC 177595; Stanley-Pool, Kinshasa ( $\sim 04^{\circ}18'S$ ,  $15^{\circ}18'E$ ); coll. P. Brichard, 1967 (72.1 mm SL). MRAC 86-21-P-22; Inga, fl. Zaïre ( $\sim 5^{\circ}39'S$ ,  $13^{\circ}39'E$ ); coll. S. Mutambue, October 1985 (65.1 mm SL).

*Republic of Congo*: MRAC A4-046-P-0224–0232, Riv. Djoué en aval du barrage ( $\sim 4^{\circ}19'S$ ,  $15^{\circ}14'E$ ); coll. V. Mamonekene, P. Bakabana, and A. Ibala Zamba; 14 May 2004 (48.0–65.4 mm SL).

*Discussion*

All *B. yseuxi* have 7.5 scales above the lateral line whereas all other *Bryconaethiops* species usually have 6.5 or less except for three specimens, two identified as *B. macrops* [MRAC 67490 (109.1 mm SL) and syntype MRAC 7228–7229 (81.9 mm SL)] and another as *B. microstoma* [BMNH 1920.5.17:5–6 (132.9 mm SL)], all three of which also have 7.5 scales.

A detailed study of the type series of *B. macrops* revealed that some specimens were wrongly labelled as types. Boulenger (1920) reported 18 syntypes for *B. macrops*: four from Bafwasende, four from Avakubi, two from Bosabangi, and eight from Fundi (Democratic Republic of Congo). Paugy (1984) erroneously reported a holotype for *B. macrops* (BMNH 1919.9.10:100). Further, Eschmeyer (1998) erroneously reported 14 syntypes and listed only nine. According to the original description two samples from Poko, i.e. respectively MRAC 7230 (1) (see Eschmeyer 1998 and MRAC catalogue) and BMNH 1919.9.10.102–103 (2) (see BMNH online catalogue at <http://internet.nhm.ac.uk/cgi-bin/perth/fish/indextaxon.dsml>), labelled as types are non-type specimens. At present only 11 syntypes can be found: four of four from Bafwasende [BMNH 1919.9.10.101 (1); MRAC 7225–7227 (3)]; three of four from Avakubi [BMNH 1919.9.10:100 (1); MRAC 7228–7229 (2)]; one of two from Bosabangi [MRAC 7340 (1)] and four of eight from Fundi [MRAC 7673–7678 (four of six according to coll. numbers, one of them cleared and stained but not found)].

Boulenger (1916) synonymized *B. microstoma* var. *habereri* with *B. yseuxi*. As a result of the synonymy of *B. yseuxi* with *B. microstoma*, *B. microstoma* var. *habereri* became a junior synonym of *B. microstoma*. Due to the revalidation of *B. yseuxi* the status of *B. microstoma* var. *habereri* was reinvestigated and it became clear that *B. microstoma* var. *habereri* is not a synonym of *B. yseuxi*. The holotype of *B. microstoma* var. *habereri* differs from *B. yseuxi*, amongst others, in the number of scales between the origin of the dorsal fin and the lateral line (6.5 versus 7.5); the higher number of gill rakers [20/1/16 (36) versus 11–13/1/8–12 (total: 20–25)]; and the shorter dorsal and anal fin bases [14.9 and 20.8% SL versus 15.7–17.6 (mean: 16.5) and 22.7–25.9% SL (mean: 24.7)]. Hence, *B. microstoma* var. *habereri* is considered as a synonym of *B. microstoma*. However, our research revealed that the holotype of *B. microstoma* var. *habereri* has only 35 longitudinal line scales whereas all examined *B. microstoma* from the Congo basin have between 36 and 41 (median: 39). Further research on the status of *B. microstoma* var. *habereri* is planned but for the stability of nomenclature it is retained as a junior synonym of *B. microstoma*.

Boulenger (1909) synonymized *B. mocquardianus* with *B. microstoma*. This synonymy was also briefly revised to check the possibility of a synonymy with *B. yseuxi*. The holotype of *B. mocquardianus* differs from *B. yseuxi* amongst others in the number of scales between the origin of the dorsal fin and the lateral line (6.5 versus 7.5); the higher number of gill rakers [16/1/13 (30) versus 11–13/1/8–12 (total: 20–25)]; and the shorter dorsal and anal fin bases [15.3 and 20.3% SL versus 15.7–17.6 (mean: 16.5) and 22.7–25.9% SL (mean: 24.7)]. Our research revealed that the holotype of *B. mocquardianus* has only 10 scales around the caudal peduncle whereas all examined *B. microstoma* from the Congo River basin have 12. Further research on the status of *B. mocquardianus* is also planned but for the stability of nomenclature it is retained as a junior synonym of *B. microstoma*.

## Comparative material examined

### *Bryconaethiops microstoma* Günther, 1673

*Cameroon*: BMNH 1920.5.17.5–6; Dja River basin; purchased by G. Bates, 1920 (132.9–172.4 mm SL). NMW 62749 (holotype of *Bryconaethiops microstoma* var. *habeneri* Steindachner, 1914); “Dscha, einem zuflusse des Sanga” (Dja Basin: ~3°42’N–2°00’N, 12°00’E–15°12’E); coll. K. Alb. Haberer (111.0 mm SL).

*Democratic Republic of Congo*: BMNH 1873.7.28:25–26 (syntype); “Boma”, Lower Congo (~5°06’S, 23°13’E); purchased by Monteiro, 1873 (76.4–87.1 mm SL). BMNH 1975.6.20.172–174; Ituri Bridge (~1°40’N, 27°01’E); coll. K. Banister, 1975 (86.3–19.7 mm SL). MRAC 48567–48568; Boma (~5°06’S, 23°13’E); coll. Delguste, 1937 (71.5–79.3 mm SL). MRAC 99040–99043; Stanley-Pool (~4°15’S, 15°25’E); coll. J. Mandeville, 10 August 1955 (86.9–101.6 mm SL). MRAC 79180; Leopoldville, Stanley-Pool (~4°18’S, 15°18’E); coll. M. H. Pierret, 1952 (54.6 mm SL). MRAC 116809–116811; Stanley-Pool (~4°15’S, 15°25’E); coll. Mission Brien-Poll-Bouillon, 19 September 1957 (79.6–102.8 mm SL). MRAC 116837–116839; Stat. 40. Stanley-Pool, extérieur des îles de l’archipel N’Djili vers l’île de Cristal (~4°15’S, 15°25’E); coll. Mission Brien-Poll-Bouillon, 7 October 1957 (79.1–82.9 mm SL: one cleared and stained specimen). MRAC 94532, Boma, fl. Zaire (~5°06’S, 23°13’E); coll. J. Mesmaekers, April 1954 (78.0 mm SL). MRAC 154342; Stanley-Pool, Riv. N’Sele (~4°14’S, 15°33’E); coll. J. Mandeville, 3 February 1957 (45.5 mm SL). MRAC 154343; Stanley-Pool, passé de Kakongo (~5°12’S, 12°07’E); coll. J. Mandeville, 7 October 1957 (84.5 mm SL). MRAC 154344; Stanley-Pool, passé de Yankau (~4°15’S, 15°25’E); coll. J. Mandeville, 12 December 1947 (77.7 mm SL). MRAC 154345–154346, Stanley-Pool, Station Bunzi (~4°15’S, 15°25’E); coll. J. Mandeville, 17 January 1958 (71.1–75.5 mm SL). MRAC 154347–154348, Stanley-Pool (~4°15’S, 15°25’E); coll. J. Mandeville, 21 January 1958 (72.5–77.5 mm SL). MRAC 154349, Stanley-Pool, archipel M’Bamu, passé de Mampombo (~4°15’S, 15°25’E); coll. J. Mandeville, 12 December 1947 (68.1 mm SL). MRAC 154350–154355; Stanley-Pool, Yankau (~4°15’S, 15°25’E); coll. J. Mandeville, 17 January 1958 (48.9–80.0 mm SL). MRAC 177572–177577; Stanley-Pool, Kinshasa (~4°18’S, 15°18’E); coll. P. Brichard, 1967 (55.7–70.9 mm SL).

*Equatorial Guinea*: MNHN 85-428 [holotype of *B. mocquardianus* (Thominot, 1886)]; “San Benito” (~1°36’N, 9°37’E); coll. M. Guiral (86.5 mm SL).

### *Bryconaethiops boulengeri* Pellegrin, 1900

*Democratic Republic of Congo*: MRAC 3204; Tolo, Riv. Lukenie (~2°44’S, 18°09’E); coll. Maes (105.6 mm SL). MRAC 48009; Riv. Goa à Popokabaka (~5°42’S, 16°35’E); coll. Dr

Duren, 1937 (80.5 mm SL). MRAC 46215; Karawa (2°20'N, 20°18'E); coll. Rèv. Wallin, 1936 (109.4 mm SL). MRAC 67680; Village Keseki, Riv. Gasosi (~2°07'S, 16°32'E); coll. H. Schouteden (N'Kele) (120.6 mm SL). MRAC 79208; Bokoro (~2°50'S, 18°23'E); coll. Rèv. Père Ed. Jans, 1952 (61.5 mm SL). MRAC 174151; Lomami, Terr. De Lomela Sankuru (0°46'N, 24°16'E); coll. R. Laurent, 1959 (86.9 mm SL).

*Republic of Congo*: MRAC 178206; Brusseaux, ~100 km à l'Ouest de Brazzaville, affluent supérieur de la rivière Foulakari (~4°14'S, 15°08'E); coll. P. Brichard, 1964 (56.4 mm SL). MRAC A4-046-P-0213-0214; Riv. Léfini, au confluent avec la Louna (2°99'S, 15°50'E); coll. V. Mamonekene, J. Snoeks, and E. Vreven, 17 September 2004 (58.2–84.9 mm SL). MRAC A4-046-P-0219; Riv. Louna, au camp “projet gorille” (~2°58'S, 15°30'E); coll. V. Mamonekene, E. Vreven, and A. Ibala Zamba, 2 October 2004 (61.7 mm SL). MRAC A4-046-P-0220-0223; Riv. Djoué en amont du barrage (~4°19'S, 15°14'E); coll. V. Mamonekene, P. Bakabana, and A. Ibala Zamba; 15 March 2004 (72.6–81.0 mm SL).

*Gabon?*: MNHN 85-356 (holotype); “Adouma, Ogôoué” (~0°49'S, 9°00'E) (92.3 mm SL).

***Bryconaethiops macrops* Boulenger, 1920**

*Angola*: MRAC 15870; Dundo, Riv. Luachima (7°21'S, 20°50'E); coll. A. De Barros Machado (Museo do Dundo), 24 March 1948 (45.3 mm SL).

*Democratic Republic of Congo*: BMNH 1919.9.10: 100 (syntype); Avakubi (~1°20'N, 27°34'E); coll. Dr Christy, 1912 (105.0 mm SL). MRAC 7223 (syntype); Bosabangi (~1°27'N, 27°37'E); coll. Dr Christy, 1912 (83.8 mm SL). MRAC 7225–7227 (syntypes); Bafwasende (~1°05'N, 27°16'E); coll. Dr Christy, 1912 (70.0–85.7 mm SL). MRAC 7228–7229 (syntypes); Avakubi (~1°20'N, 27°34'E); coll. Dr Christy, 1912 (81.8–107.4 mm SL). MRAC 7230 (no syntype); Poko (~3°08'N, 26°54'E); coll. Dr Christy, 1912 (99.3 mm SL). MRAC 7340 (syntype); Bosabangi (~1°27'N, 27°37'E); coll. Dr Christy, 1912 (97.4 mm SL). MRAC 7679–7680; Poko (~3°08'N, 26°54'E); coll. Dr Christy, 1912 (93.5–102.2 mm SL). MRAC 7940; same data (89.7 mm SL). MRAC 66673; Panga (~0°43'S, 19°37'E); coll. Dr Schouteden, 1925 (101.1 mm SL). MRAC 67490; Kama, Riv. Kama-Elila, Maniema (3°32'S, 27°08'E); coll. Milliau (109.1 mm SL). MRAC 72645–72646; Matadi, Riv. M'Pozo, vill. M'Pozo (5°47'S, 13°29'E); coll. M. Poll, 28 July 1948 (66.0–112.5 mm SL). MRAC 72817; Titule, Riv. Bima (3°16'N, 25°34'E); coll. Rèv. Frère J. Hutsebaut, June 1949 (58.2 mm SL). MRAC 75800–75801; Bosobolo, Riv. Ubanghi (~4°11'N, 19°54'E); coll. Dr Vachaud, 1950 (91.7–101.3 mm SL). MRAC 78119; Leopoldville (~4°18'S, 15°18'E); coll. M. N. Pierret, 1951 (78.2 mm SL).

***Bryconaethiops quinquesquamae* Teugels and Thys van den Audenaerde, 1990**

*Cameroon*: MRAC 73-40-P-28 (holotype); Cross river near Mamfe Town, Cameroon (5°46'N, 9°17'E); coll. J. Grimshaw, 18–25 November 1971 (78.5 mm SL). MRAC 73-40-P-29–30 (paratypes); same data as for holotype (69.9–75.8 mm SL). MRAC 73-29-P-934 (paratype); Mamfé, Cross river Cameroon (5°46'N, 9°17'E); coll. D. F. E. Thys van den Audenaerde, 23 April 1970 (cleared and stained specimen). MRAC 73-29-P-935–937 (paratypes); same data; 22 April 1970 (one cleared and stained specimen) (82.2–82.9 mm SL; with one badly preserved specimen). MRAC 73-29-P-938 (paratype); same data; 24 April 1970 (68.5 mm SL).

*Nigeria*: MRAC 88-35-P-185–186 (paratypes); Mbiama, Orashi river Nigeria (5°03'N, 6°27'E); coll. C. B. Powell, 9–10 September 1987 (50.6–57.7 mm SL).

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