

A new species of the genus *Congochromis* (Cichlidae) from the Central Congo basin

by

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ABSTRACT. - *Congochromis robustus*, a new cichlid species, is described from the Central Congo basin. It differs from its congeners by its larger size and a combination of morphological characters: greater cheek depth, greater snout length, smaller eye orbit diameter and smaller postorbital length.

RÉSUMÉ. - Une nouvelle espèce de cichlidé du genre *Congochromis* (Cichlidae) du bassin central du Congo.

Congochromis robustus, une nouvelle espèce de cichlidé, est décrite de la République Démocratique du Congo. Elle diffère de ses congénères par une plus grande taille et une combinaison originale de caractères : plus grande profondeur de la joue, plus grande longueur du museau, plus petit diamètre de l'orbite oculaire et plus petite longueur postorbitale.

Key words. - Cichlidae - *Congochromis* - Congo River - New species.

The genus *Congochromis* was erected by Stiassny and Schlieven (2007) for four species, three of which used to belong to *Nanochromis* (Pellegrin, 1904), and one newly described species, based on the following morphological and anatomical characters: only the last three to five pored scales of the upper lateral line contiguous with dorsal-fin base; fully scaled nape, partially scaled chest and cheek; jaw teeth relatively robust unicuspid, not closely spaced; and the presence of a small supraneural bone. Members of the genus are superficially similar, what makes it difficult to identify preserved collections, especially as the main part of these collections in the different museum is more than 50 years old. These specimens are usually not accompanied with data about their life coloration, what would be a valuable contribution for their identification. Nevertheless, a number of specimens of undescribed species is to determine from the different museum collections. Here, a new species is described based on specimens deposited at the Musée royal d'Afrique centrale, Tervuren (Belgium).

MATERIAL AND METHODS

External counts and measurements follow Stiassny and Schlieven (2007). All measurements were taken by the author on the left side of the specimens (new species specimens and comparative specimens) with digital callipers with an accuracy of ± 0.03 mm, recorded to the nearest 0.1 mm.

X-rays of all specimens were produced at AMNH. Because of the small number of available material, no clearing and staining of a specimen had been done. Abbrevia-

tions used are: AMNH, American Museum of Natural History, New York; BMNH, Natural History Museum, London; MNHN, Muséum national d'Histoire naturelle, Paris; MRAC, Musée royal d'Afrique centrale, Tervuren; NMW, Naturhistorisches Museum, Wien; ZSM, Zoologische Staatssammlung München; SL, standard length; HL, head length; SD, standard deviation.

Comparative material

Nanochromis dimidiatus. - 11 specimens: MNHN 92-120, holotype, Central African Republic. MNHN 92-121, paratypes, Central African Republic. MNHN 1921-440, Central African Republic: Bangui. MNHN 1921-441, Central African Republic: Bangui. MRAC 96-044-P-0113, Congo (Brazzaville): Etoumbi, NW towards Gabon (behind the bac).

Congochromis pugnatus. - 4 specimens: AMNH 6079, holotype, male, 48.2 mm SL, Democratic Republic of Congo, Kisangani (Stanleyville), H. Lang and J.P. Chapin, May 1915; AMNH 237670, paratypes, 2 ex., 1 C&S, 37.0-51.5 mm SL, same as holotype; ZSM 34981, paratypes, 2 ex., 37.0-49.2 mm SL, same as holotype.

Congochromis sabinae. - 19 specimens: NMW 94839, holotype, male, 50.4 mm SL, Congo, (Brazzaville), Loubi River, tributary of the Likoula River (Congo system), SW of Makoua, nearby the village of Lengui; 0°0'S-15°38'E, R. Sawatzky, Mar. 1996; NMW 94840, paratypes, 1 male, 1 female, 52.1 + 38.6 mm SL, same as holotype; AMNH 235651-2, 1 male, 1 female, paratypes, 48.2+37.4 mm SL, same as holotype; MRAC 20479-20481, 2 males, 1 undet., paratypes, 21.9-30.2 mm SL, Congo français, Sangha River; MRAC 2396-044-P-0196-0197, paratypes, 2 males, 52.5 + 32.5 mm SL, Congo (Brazzaville), stream close to Olombo,

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Western road, 3 km before La Komo, J. Huber, Jul. 1978; MRAC 96-044-P-0198-0199, paratypes, 2 undet., 16.0 + 20.6 mm SL, Congo (Brazzaville), pounds 50 km north to Obouya, close to the bridge over La Vouma, J. Huber, Jul.-Aug. 1978; MRAC 96-044-P-0200-0201, paratypes, 2 undet., 13.2 + 16.0 mm SL, Congo (Brazzaville), after the bac de Makoua, in pounds of the Nionde forest, J. Huber, Jul.-Aug. 1978; MRAC 96-044-P-0202, paratype, 1 undet., 28.2 mm SL, Congo (Brazzaville), small stream 3 km East to Louenk, J. Huber, Jul.-Aug. 1978; MNHN 1930-60, paratypes, 1 male, 3 females, 33.5-46.2 mm SL, Gabon, Liboumba (Ogowe system), Baudon, 1930.

Nanochromis squamiceps. - 13 specimens: all Democratic Republic of Congo, Congo River system: BMNH 1902.4.14.11, holotype, Lindi River; MRAC 49244-29251, Kunungu. MRAC 78-19-P-265-268, Rivière Iteli.

SYSTEMATICS

Congochromis robustus, new species (Figs 1, 2)

Holotype. - MRAC 135706, male, 62.1 mm SL; Democratic Republic of Congo, Yaekama: Congo River system, west of the town of Yangambi, 0°47'N-24°17'E, J.P. Gosse, 1954.

Paratypes. - MRAC 135707-135710, 4 males, 55.1-75.6 mm SL, same as holotype.



Figure 1. - *Congochromis robustus*, MRAC 135706, holotype, male, 62.1 mm SL; Democratic Republic of Congo: Yaekama, 0°47'N-24°17'E. Scale bar = 10 mm.

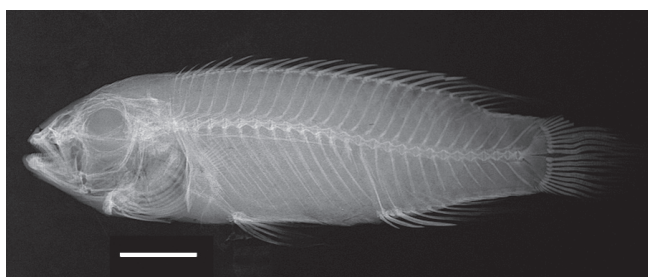


Figure 2. - X-ray of the holotype of *Congochromis robustus*, MRAC 135706. Scale bar = 10 mm.

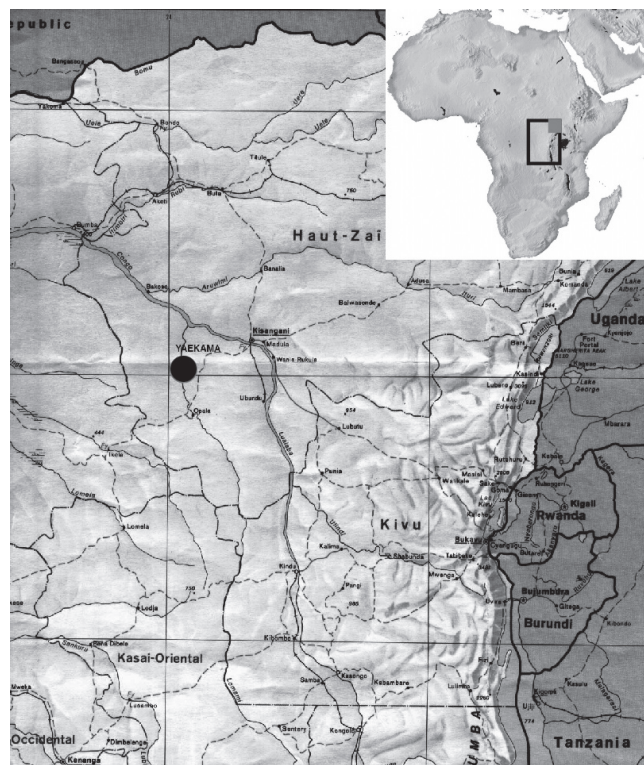


Figure 3. - Location of type locality of *Congochromis robustus*. The black dot indicates the position of Yaekama.

Diagnosis

The new species of *Congochromis* share with all congeners the following characters: body moderately elongated; steep and rounded front profile; snout rounded; caudal fin rounded; one tubular infraorbital bone; nape and opercle scaled; cheek with 2 scale rows, at least on the posterior part. It differs from all congeners in its much larger size (75.6 mm SL vs. 49.5 mm in *C. dimidiatus*, 51.5 mm in *C. pugnatus*, 52.5 mm in *C. sabinae*, 44.7 mm in *C. squamiceps*); its greater cheek depth (30.4-33.8% HL vs. 20.1-32.0 in *C. dimidiatus*, 24.4-28.8 in *C. pugnatus*, 16.5-31.1 in *C. sabinae*, 24.1-32.0 in *C. squamiceps*); its greater snout length (28.9-38.7% HL vs. 16.6-27.2 in *C. dimidiatus*, 28.6-33.3 in *C. pugnatus*, 18.8-34.3 in *C. sabinae*, 21.5-30.4 in *C. squamiceps*); its smaller eye orbit diameter (23.8-27.7% HL vs. 28.9-35.1 in *C. dimidiatus*, 26.9-30.6 in *C. pugnatus*, 26.2-33.9 in *C. sabinae*, 27.1-34.8 in *C. squamiceps*); its smaller postorbital length (37.5-43.4% HL vs. 42.6-47.4 in *C. dimidiatus*, 39.9-45.1 in *C. pugnatus*, 37.5-47.3 in *C. sabinae*, 40.7-46.0 in *C. squamiceps*).

Description

Measurements and meristic counts for holotype and 4 paratypes are in table I.

Body moderately elongate (body depth 30.3-33.7% SL), head relatively short (29.4-35.5% SL) but deep (head depth

59.9-67.4 % HL). Jaws isognathous, lips fleshy. Dorsal head profile straight to about midorbit, then slightly rounded. Dorsal profile curving gently downward along length of dorsal fin base. Ventral profile more or less straight. First ray of pelvic fin longest. Tips of pelvic fins not reaching origin of anal fin. Caudal fin rounded. Caudal peduncle always longer than deep.

Osteology and dentition. Infraorbital bones series with lachrymal and one tubular element; lachrymal with four openings of laterosensory system. 24-25 vertebrae, of which are 13-14 abdominal and 11-12 caudal.

Premaxilla and dentary with three-four rows of unicuspid teeth. Anteriorly in the lower jaw a few teeth orientated posteriorly, not buccally. Lower pharyngeal bone triangular, with teeth shouldered unicuspid (lateral parts of the bone) or asymmetric bicuspid (central field).

Gill rakers on first gill arch. Seven-nine tuberculate gill rakers on ceratobranchial, five-six pointed gill rakers on epi-branchial. Well-developed hanging pad on roof of the pharynx.

Scales

Cycloid; one-two rows of scales at dorsoposterior margin at cheek; 3-4 horizontal rows on operculum. Flank scales smaller than body scales. Occipital region covered with scales smaller than body scales. Chest scales absent or small and deeply embedded, no scales or just a few dispersed scales between pectoral and pelvic fins. Upper lateral line always with some non-pored scales, separated from dorsal-fin base anteriorly by 3 scales, at the 8th pored scale by 1/2-1 scales, at last pored scale by no scale. End of upper lateral line never overlapping lower lateral line. Upper lateral line separated from lower lateral line by two scales, excluding pored rows. About 1/4 of caudal fin covered with small scales; other fins unscaled.

Coloration

Coloration of living specimens unknown.

Preserved specimens (Fig. 1)

Body uniformly brown. Most pigmentation faded because of long preservation time, but most body scales paler at the centre than at the marginal parts. Soft dorsal, anal, and caudal fins heavily maculate with alternating rows of light and dark maculae creating a striped patterning. Other parts of these fins and all other fins brownish, possibly due to preservation. A pale dark blotch on the posterior edge of the opercle, scaleless or only partially covered by scales. All specimens lack a dark longitudinal band extending from eye to the caudal peduncle; this band is characteristic for its congeners, as far as the life colour pattern is documented (Lamboj, 2004; Stiassny and Schliewen, 2007); absence of this feature might be a long-term preservation artefact.

Distribution

Only known from the type locality in the Democratic Republic of Congo, Yaekama:

Table I. - Morphometrics and meristics of the holotype and four paratypes of *Congochromis robustus*. SD: standard deviation.

	Holotype	Paratypes			
		Mean	SD	Range	
Standard length	62.07	63.3		55.1	- 75.6
% of standard length					
Body depth	30.6	31.5	1.4	30.3	- 33.7
Head length	30.7	32.3	2.5	29.4	- 35.5
Caudal peduncle length	15.3	15.3	0.5	14.5	- 16.0
Caudal peduncle depth	15.3	14.7	0.6	14.0	- 15.3
Length of dorsal-fin base	61.2	60.6	1.6	58.2	- 62.5
Length of anal-fin base	16.2	16.7	0.7	16.0	- 17.4
Predorsal distance	26.3	28.7	2.4	26.3	- 32.1
Preanal distance	68.2	67.9	2.0	65.8	- 70.0
Prepectoral distance	35.6	32.7	6.9	20.8	- 38.1
Prepelvic distance	40.6	35.4	7.9	21.6	- 40.6
% of head length					
Head depth	67.3	64.1	3.2	59.9	- 67.4
Snout length	32.4	34.5	4.0	28.9	- 38.7
Eye diameter	26.6	25.5	1.7	23.8	- 27.7
Postorbital distance	41.0	40.0	2.4	37.6	- 43.4
Interorbital distance	27.2	26.4	0.7	25.4	- 27.2
Cheek depth	33.9	32.4	1.7	30.4	- 33.9
Lower jaw length	40.3	40.2	2.2	36.7	- 42.2
Preorbital distance	17.3	17.3	0.9	16.4	- 18.7
% of caudal peduncle depth					
Caudal peduncle length	100.2	104.6	5.2	100.2	- 113.3
Meristics					
Upper lateral-line scales	15	17		15	- 18
Lower lateral-line scales	7	4		4	- 8
Total lateral-line scales	27	27		25	- 27
Circumpeduncular scales	12			12	
Dorsal-fin spines	17	17		16	- 17
Dorsal-fin rays	8	8		7	- 9
Anal-fin spines	3	3		3	
Anal-fin rays	5	6		5	- 7
Pectoral-fin rays	11	12		11	- 12
Gill rakers on lower limb of first arch	7	7		7	- 9
Total gill rakers on first arch	13	13		13	- 15

Congo River system, 0°47'N-24°17'E, which is situated just downstream of Yangambi (Central Congo basin, Kisangani area, Fig. 3).

Etymology

From the Latin *robustus*, meaning heavy or strong, refers to the big size and robust overall body shape.

CONCLUDING REMARKS

As is typical for the genus, the distribution of the species is restricted to the central Congo basin. Due to the small amount of specimens available, the whole distribution range cannot be determined. In addition, precise information about the locality, colour pattern and behaviour is lacking and information about the females is unavailable. Other material from the MRAC collection, not listed in the comparative material, has been studied too, but specific identification was not possible. In general, more species occurring in this area is not to exclude (U. Schliewen, pers. com.). To avoid any confusions or wrong determinations, none of this material had been assigned to any of the described *Congochromis* species herein, as long as no additional data, especially life material for DNA-works and description of live coloration, is available to allow more clear and precise statements.

An alternative hypothesis, that the examined specimens of *C. robustus* are representing larger specimens of one of the described species is rejected as it seems not plausible: if other species would be able to reach such size too, at least some few big specimens of other *Congochromis* should have been collected – at least by some statistical chance. But this is not the case. Additionally, personal experience has shown that even in aquarium care, where most cichlid species reach a bigger size than in the wild, congeners are never reaching such a big size. Only more material and more detailed stud-

ies, based on different methods, would allow to clear the species diversity and distribution of the genus *Congochromis* in the Kisangani area. Notably, it also is still to clear if the new species is sympatric with one of the congeners – what cannot absolutely be excluded – or if there is some pattern of micro-allopatric distribution for *Congochromis*. The latter situation would have some support by an upcoming study about the phylogeny, relationship and distribution pattern of chromidotilapiin cichlids, based on molecular analysis (Schwarzer *et al.*, pers. com.)

However, the main intention of this paper is a straight description of the new species, and after all, the current information is sufficient for an identification of the new species and allows a comparison with the other four described species of the genus.

Acknowledgements. - I thank the following persons and institutions for help and discussion in my work or loan of material: M. Stiassny (AMNH), James Maclaine (BMNH), J. Snoeks, M. Parent (MRAC), P. Pruvost (MNH), U. Schliewen (ZSM), E. Miksch (NMW). Additional thanks to two anonymous reviewers for their valuable comments on the manuscript.

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Reçu le 19 juin 2011.

Accepté pour publication le 6 janvier 2012.