

'*Haplochromis*' *snoeksi* (Perciformes: Cichlidae) a new species from the Inkisi River basin, Lower Congo

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Abstract

'*Haplochromis*' *snoeksi*, new species, is described from a single locality, Ngeba village on the Ngeba /Ngufu River, a right bank affluent of the Inkisi River basin (Lower Congo; Democratic Republic of Congo). The species is distinguished from its riverine Congo River basin congeners by the following unique combination of characters: thorax partially naked, i.e. without small scales; 16 scales around caudal peduncle; and an upper lateral line with 23 scales.

Résumé

Une nouvelle espèce, '*Haplochromis*' *snoeksi*, est décrite d'une seule localité, le village Ngeba sur la rivière Ngeba/Ngufu, un affluent de la rive droite de l'Inkisi (Bas-Congo; République Démocratique du Congo). Cette espèce se distingue des ses congénères des rivières de la province ichthyologiques du bassin du Congo par la combinaison des caractères suivants : un espace thoracique partiellement nu, c'est-à-dire dépourvu d'écailles, 16 écailles autour du pédoncule caudal et une ligne latéral supérieure avec 23 écailles.

Introduction

The family Cichlidae is characterized by a single nostril on either side of the head, a lateral line which is divided in two parts and a single continuous dorsal fin which has a spiny anterior and soft posterior fin-ray part (Snoeks, 1994; Nelson, 2006; Stiassny et al., 2008). Current estimates of the number of cichlid species vary greatly, between approximately 1300 up to 3000 species, with several new species discovered annually.

In Africa nearly 150 genera are recognized of which the great majority of species are concentrated in and around the Great Lakes of eastern and central Africa (Stiassny et al., 2008).

According to Roberts (1975), Greenwood (1983), and Lévêque (1997) continental Africa can be subdivided in 10-12 ichthyofaunal provinces. The Congo (formerly Zaire) ichthyofaunal province contains the entire Congo River basin, Lake Tanganyika, and the Malagazi and Rukwa River basins (Seegers, 1996) included. Lake Kivu is not included into the province (Snoeks et al., 1996). The Congo River basin is itself subdivided into three major parts (see also Roberts & Stewart, 1976; Hanssens et al., in prep): The Upper Congo or Lualaba River basin, i.e. from the sources to upstream of the Wagenia 'falls' in the neighbourhood of Kisangani (formerly Stanleyville); the Middle Congo River basin, i.e. from downstream the Wagenia 'falls' in the neighbourhood of Kisangani to Kinshasa (formerly Leopoldville), Pool Malebo (formerly Stanley-Pool) included; and the Lower Congo River basin, i.e. from Kinshasa, Pool-Malebo (not included) to the Atlantic Ocean. In fact, the rapids at Kinsuka (DRC) and Kintambo (Republic of Congo) seem to form the border between Pool-Malebo and the Lower Congo River.

At present 14 cichlid genera are known from the Lower Congo basin and Pool Malebo (Hanssens et al., in prep). One of these is the genus *Haplochromis* Hilgendorf, 1888. After an impressive revision of the genus *Haplochromis* Greenwood (1979, 1980) recognized several monophyletic lineages which he referred to as separate genera. However, Greenwood's generic revision has been intensively challenged (see Hoogerhoud 1984, van Ojien, 1991; Snoeks, 1994; Witte & Witte-Maas, 1987). Hoogerhoud (1984) therefore referred to the genus *Haplochromis* sensu lato as defined prior to Greenwood (1979, 1980) and placed the genus name between quotes. *Haplochromis* sensu stricto then refers to the genus as defined and restricted by Greenwood (1979, 1980) to five, lacustrine, species. According to Snoeks (1994) the genus *Haplochromis* sensu lato can be distinguished from other mouthbrooding taxa by: presence of ocelli on the anal fin (vs. absence in *Oreochromis*, *Sarotherodon* and *Pseudocrenilabrus*); a number of ocelli (3-9 vs. 6-20 in *Astatoreochromis*); teeth in the oral jaws occur in two or more series anteriorly, narrowing to a single row posterolaterally (vs. a broad bands of teeth anteriorly and laterally in *Hoplotilapia* and *Platytaeniodus*; no tooth shape which has outer teeth with inwardly direct, strongly recurved major cusps and reduced minor cups (vs. *Macropocheilichthys* that has it).

At present 14 haplochromine are known from the Congo River basin (excluding endemics from Lake Tanganyika and its affluents, i.e. *H. burtoni*, *H. horei* and *H. stappersi*): *H. bakongo*; *H. brauschi*; *H. callichromis*; *H. demeusii*; *H. fasciatus*; *H. luluae*, *H. moeruensis*, *H. oligacanthus*; *H. polli*; *H. schwetzi*; and *H. stigmatogenys*.

Adjacent ichthyofaunal provinces to the Lower Congo area are the Lower Guinea [i.e. the coastal river basins from the Cross River basin (Nigeria and Cameroon border) in the north to the Shiloango River basin (Republic of Congo and Angola/Cabinda border) in the South (Roberts, 1975)] and the Quanza ichthyofaunal provinces [i.e. from the M'bridge River basin (Angola) in the north to the Catumbela River basin (Angola) in the south (Roberts, 1975)]. However, no riverine *Haplochromis* are known from the Lower Guinea ichthyofaunal province whereas only two species, i.e. *H. lucullae* and *H. multiocellatus*, are known from the Quanza ichthyofaunal province.

In his revision of the *Haplochromis* of "Bas-Congo" Thys van den Audenaerde (1964) reported four species. Three species were reported from the main channel, i.e. *H. demeusii* (from between Matadi and Luozi); *H. fasciatus* from between Boma and Matadi and *H. polli* (from between Luozi and Pool Malebo) and only one, i.e. *H. bakongo* from two affluent river basins (i.e. from the Kwilu and Lukunga River basins).

In January 2007, during fish sampling by one of us (SWL) at Ngeba village situated on the Ngeba/Ngufu River (respectively, up- and downstream names of the river according to the large villages near the river), a right bank affluent of the Inkisi River basin, four *Haplochromis* specimens were collected. These and three additional specimens collected in 2008 could not be attributed to any of the 16 known riverine *Haplochromis* species of the Congo (14 species) and the Quanza (two species) ichthyofaunal provinces. The description of the new species is given below.

Material and methods

Measurements and counts follow Snoeks (1994 and 2004) except for the number of scales between the pectoral and the pelvic fin bases as the new species lacks scales in this area. The seven specimens (holotype and paratypes) attributed to the new species are listed under the species description. Additional specimens examined are listed under the heading comparative specimens examined. Abbreviations: AMNH: American Museum of Natural History, New York, USA ; DRC: Democratic Republic of Congo; MRAC: Royal Museum for Central Africa, Tervuren, Belgium; ZSM: Zoologische Staatssammlung München, München,

Germany. Abbreviations of measurements are explained in Table I. All locality data translated in English.

***Haplochromis* 'snoeksi' sp. nov.**

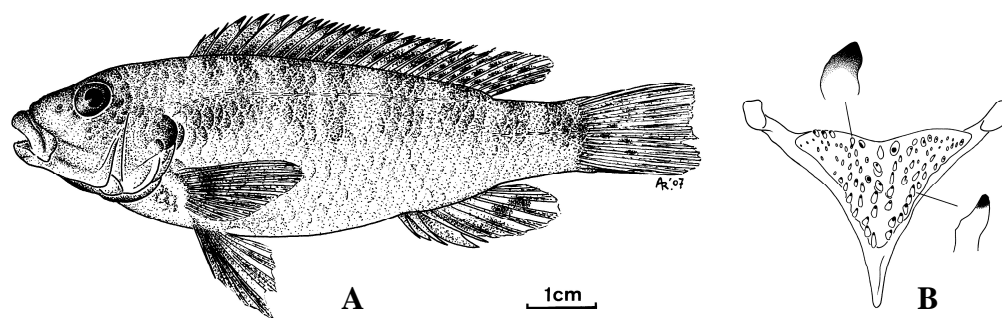


Figure 1. **A.** Lateral view of *Haplochromis snoeksi* (MRAC 2007-009-P-0001: holotype, male: 82.1 mm SL), Ngeba / Ngufu River at Ngeba, affluent of Inkisi River (Lower-Congo, DRC). **B.** Occlusal view of lower pharyngeal jaw of *H. snoeksi* (holotype).

Holotype. MRAC 2007-009-P-0001, Ngeba / Ngufu River at Ngeba, affluent of Inkisi River (Lower-Congo, DRC) (15°12'23.1''E - 5°11'01.5''S; 533 m altitude), Coll. S. Wamuni, 10 Jan 2007 (male: 82.1 mm SL).

Paratypes. , MRAC 2007-009-P-0004, same data as for holotype, August 25th, 2006 (male: 92.1 mm SL, DNA number MRAC 0687). - ZSM 37852 (ex. MRAC 2007-009-P-0002), same data as for holotype (male: 93.0 mm SL). - MRAC A9-014-P-0001-0002, same data as for holotype, August 12th, 2008 (2: 91.7-92.9 mm SL, DNA number MRAC 0910-0911). MRAC A9-014-P-0003, same data as for holotype, August 13th, 2008 (92.9 mm SL, DNA number MRAC 0912). - AMNH (ex. MRAC 2007-009-P-0003), same data as for holotype, January 11th, 2007 (male: 91.4 mm SL).

Diagnosis. The new species is distinguished from all riverine haplochromines from the Congo and Quanza ichthyofaunal provinces by the following unique combination of characters: thorax partially naked, i.e. without small scales (vs thorax fully scaled with small scales in *H. bakongo*, *H. brauschi*, *H. callichromus*, *H. demeusii*, *H. fasciatus*, *H. lucullae*, *H. moeruensis*, *H. multiocellatus*, *H. schwetzi*, and *H. stigmatogenys*); 16 scales around caudal peduncle (vs only 12 in *H. oligacanthus* and *H. polli*); and an upper lateral line with 23 scales (vs upper

lateral line with 17-19 scales in *H. luluae*) [comparison based on personal observations and Flower (1930)].

Description. Based on the holotype and six paratypes. Morphometric and meristics are given in Table I. Small-sized species (max. size: 93.0 mm SL) with moderately elongate body (BD: 26.4-27.4 % SL). Snout with convex profile, a little longer than eye diameter (SNL: 127.9-141.0 % ED). Eye larger than interorbital width (IOW: 160.0-190.5 % ED). Mouth terminal, with part of maxilla exposed when mouth fully closed. Lips thick, not extending to below anterior border of eye.

Teeth of outer row of upper and lower jaw moderately large, bicuspid: 26-42 in upper, 32-38 in lower jaw. Teeth of inner rows of upper jaw, in 2 or 3 rows with a total of 36-64 teeth. Teeth of inner rows of lower jaw in 2 or 4 rows of small, closely-set teeth with a total of 44-68 teeth, tricuspid. All scales ctenoid. Soft portion of dorsal fin rounded with its posterior tip not reaching the base of the caudal fin. Anal fin tip exceeding slightly that of dorsal fin but not reaching base of caudal fin. Pectoral fin with 15 rays. Pelvic fins with 8 rays, reaching anus. Caudal fin scaleless and proximally rounded. Caudal peduncle clearly longer is longer than high.

Table 1. Morphometrics and meristics for *Haplochromis snoeksi* sp. nov. (holotype + six paratypes). Frequencies for the meristics are given between brackets.

Morphometrics	holotype	holotype + paratypes			
		Min.	Max.	Mean	S.D.
Standard length (SL) in mm	82.1	82.1	93.0	89.4	4.8
In % SL					
Body depth (BD)	26.4	26.4	27.4	27.0	0.4
Head length (HL)	30.6	30.2	31.0	30.6	0.3
Head width (HW)	15.6	15.6	16.6	16.0	0.4
Dorsal fin-base length	49.5	49.5	54.7	53.6	1.9
Anal fin-base length	18.5	17.9	19.9	18.6	0.7
Predorsal distance	30.2	30.2	31.8	31.2	0.6
Preanal distance	60	55.3	62.0	57.9	2.7
Prepectoral distance	28.7	28.7	30.2	29.1	0.5
Prepelvic distance	31.8	31.8	33.0	32.5	0.5
Caudal peduncle length (CPL)	14.7	14.7	17.8	16.8	1.0
Caudal peduncle depth	11.6	11.6	12.4	12.0	0.3
In % HL					
Snouth length (SNL)	34.7	34.7	39.3	37.2	1.9
Interorbital width (IOW)	15.1	14.6	16.9	15.7	0.8
Lower jaw length	45.1	40.7	45.8	42.7	2.1

Premaxillary pedicel length	35.5	32.7	35.7	34	1.2
Cheek depth	27.5	26.2	28.6	27.1	0.8
Eye diameter (ED)	27.1	27.0	28.2	27.6	0.4
Lachrymal depth	29.1	28.8	31	29.5	0.7
Lower pharyngeal length	31.1	28.0	31.1	29.1	1.3
Lower pharyngeal width (LPW)	32.3	32.3	34.9	33.1	0.9
Dentigerous area length	16.7	15.6	17.1	16.3	0.6
Dentigerous area width (DAW)	21.5	18.3	21.5	19.6	1.0
Interorbital width % HW	31.3	28.6	31.4	30.2	1.0
Eye diameter % IOW	178.9	160	190.5	176.4	9.2
Snouth length % ED	127.9	126.3	142.1	135	7.1
Caudal peduncle depth % CPL	74.1	66.3	78.5	71.4	4.2
Lower pharyngeal width % LPL	116.3	103.8	117.5	113.6	4.7
Dentigerous area length % LPL	60.0	53.8	60.0	56	1.9
Dentigerous area width % LPW	55.4	55.4	66.7	59.3	3.8

Meristics	holotype	Min.	Max.	Median	Frequency
Upper jaw teeth (outer row)	42	38	48	46	38(2) 46(3) 48(2)
Lower jaw teeth (outer row)	28	28	32	28	28(5) 32(2)
Upper jaw teeth (inner rows)	68	68	78	76	68(1) 70(1) 72(1) 76(3) 78(1)
Lower jaw teeth (inner rows)	62	62	72	64	62(1) 64(3) 68(2) 72(1)
Total number of gill rakers (**+1+**)	7+1+2	7+1+2	7+1+2	7+1+2	7+1+2 (7)
Dorsal fin formula	XVI 9	XVI 9	XVI 9	XVI 9	XVI 9 (7)
Anal fin formula	III 6	III 6	III 6	III 6	III 6 (7)
Pectoral fin formula	15	15	15	15	15(7)
Longitudinal line scales	33	32	34	33	32(1) 33(5) 34(1)
Upper lateral line scales	23	23	23	23	23(7)
Lower lateral line scales	9	9	12	10	9(3) 10(3) 12(1)
Upper transverse line scales	5	5	5	5	5(7)
Translow	10	9	10	10	9(3) 10(4)
Scale around caudal peduncle	16	16	16	16	16(7)
Cheek scales	3	3	3	3	3(7)

Coloration. Live coloration (all males) pale brown with upper parts of body darkened and middle lighter in coloration. Operculum with a clearly marked black spot. No transverse bars visible on the lateral flanks. Lower body parts and pectoral fins bright yellow. Distal edge of pelvic fins dark. Anal fin with two or three red ocelli.

Preserved specimens (all males) brownish with six vertical, hardly visible, dark bands. A dark bar extends from below the anterior third of the eye to the mouth corner. Operculum with a clearly marked black spot. Isthmus, interoperculum and branchiostegal membranes blackish. Dorsal part of body and head lighter. Pelvic fins and distal edges of anal and dorsal fin blackish. Two or three whitish-grey anal ocelli situated between 2nd and 5th anal soft-fin ray. Ocelli not visible in one specimen [MRAC 2007-009-P-0002 (92.1 mm SL)]. Black spot at caudal-fin base. Caudal fin with small rounded blackish spots.

Etymology. This species is dedicated to Jos Snoeks, Professor at the Katholieke Universiteit Leuven (KUL: Leuven / Belgium) and curator of fishes at the Royal Museum for Central Africa (MRAC: Tervuren / Belgium) who made his Ph.D. on a systematic revision of the endemic *Haplochromis* species flock of Lake Kivu (Rwanda, DRC) (Snoeks, 1994) and since extensively worked and still works on the systematics of especially the African cichlids. This new *Haplochromis* species is dedicated to him in acknowledgment for his framing and general support of the Phd. research undertaken by one of us (SWL) and in appraisal to him as a person, a colleague and a scientist.

Distribution. *Haplochromis snoeksi* sp. nov. is only known from Ngeba village on the Ngeba/Ngufu River, one of the right bank river affluents of Inkisi River basin (Figure 2).

Ecology. The following physico-chemical parameters were collected at the type locality: air temperature: 24.5-28.7°C; water temperature: 22.1-25.6°C; dissolved O₂: 9.2 mg/l; pH: 6.5-7.2; conductivity: 73-151.1µS/cm; Total hardness: 2-5°D; substrate: sand with stones; water speed: 0.2-0.6 m/s; maximal depth: 1.2 m; and maximal width: 9.8 m.

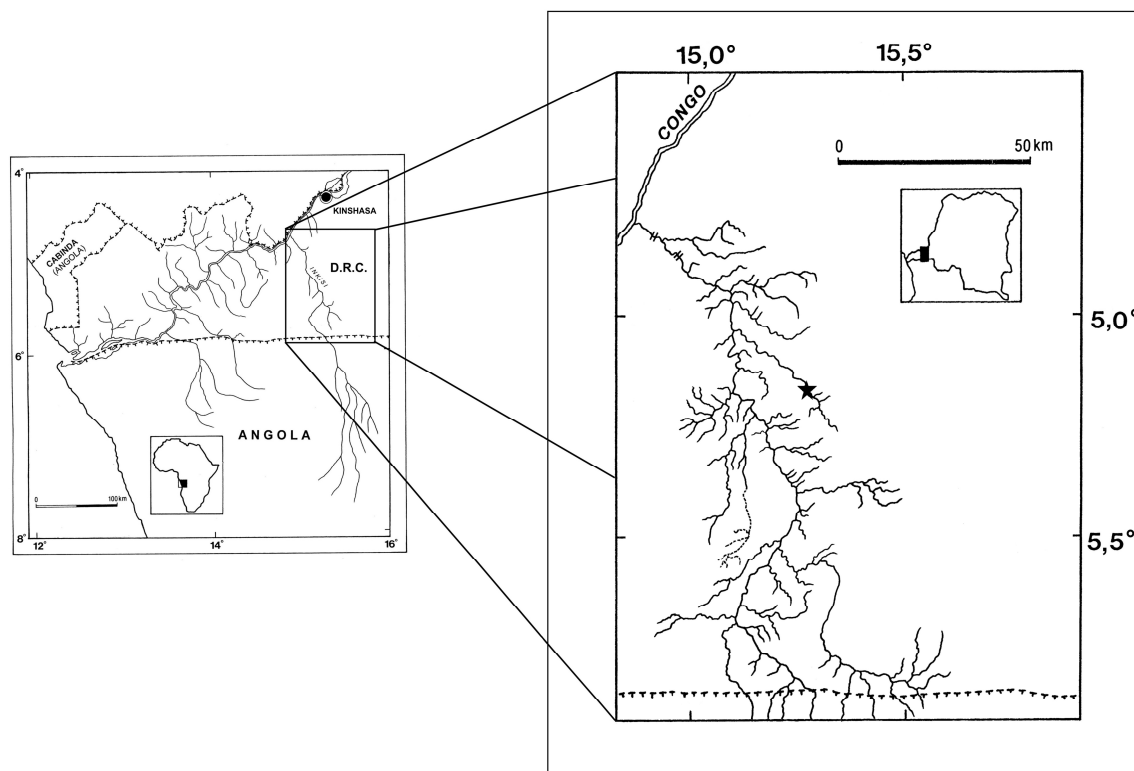


Figure 2. Distribution of *Haplochromis snoeksi* within the Inkisi River basin (DRC).

Discussion

Besides the naked thorax, *H. snoeksi* is further distinguished from the Lower Congo *Haplochromis* species with a scaled thorax, i.e. *H. bakongo*, *H. demeusii* and *H. fasciatus* by its shallow body depth, i.e. 26.4-27.4 % SL (vs. respectively 28.4-38.9, 33.7-36.7 and 37.4-40.5 % SL); its lower number of gill rakers on the lower part of the first gill arch, i.e. 7 (vs. 11-13 in *H. fasciatus*); and its high number of longitudinal line scales, i.e. 33-34 (vs. 29-31 in *H. bakongo* and 29-30 in *H. demeussii*) (comparative data from Thys van den Audenaerde, 1964).

The taxonomic history of the genus *Haplochromis* is one of ‘systematic’ confusion (Snoeks, 1994). *Haplochromis* has originally been described by Hilgendorf in 1888 as a subgenus of the genus *Chromis* Cuvier, 1814 (now a genus name within the Pomacentridae) based on *Chromis (Haplochromis) obliquidens* Hilgendorf, 1888 (type species by monotypy) described from “Lake Victoria”.

The subgenus was elevated to genus level by Boulenger (Snoeks, 1994). Regan (1920, 1921, 1922a,b,c) made it the most speciose genus of African cichlids and divided it into four subgenera: *Neochromis* Regan, 1920, *Bayonia* Boulenger, 1911 [objectively invalid (Eschmeyer, 2009)], *Ctenochromis* Pfeffer, 1893 and *Haplochromis*. All species not peculiar to the Great Lakes were placed within the subgenus *Ctenochromis* by Regan (1922b) and this based on their outer series of bicuspid or conical teeth and one or more inner series of tricuspid or conical teeth. Type species of the genus is *C. pectoralis* Pfeffer 1893 originally described from “Korogwe am Rufu” Tanzania (see Greenwood, 1979).

In his impressive revision with a cladistic approach Greenwood (1979, 1980) recognised several monophyletic lineages within *Haplochromis* which he referred to as separate genera. Only five species remained within the genus *Haplochromis*. The remaining species were re-allocated to some 24 related genera (excluding the Lake Malawi endemics), some of them new and others resurrected (Snoeks, 1994). Greenwood (1979) gave a very different definition of the genus *Ctenochromis*. The most important diagnostic characters revealed to be, next to others, the presence of a naked area along the ventral margin of the cheek; an abrupt size transition between the very small scales of the chest and the much larger scales of the lateral and ventrolateral aspects of the body; the presence of a well circumscribed naked patch on the chest on each side of the body; and the last pored scales of the upper lateral line being separated from the dorsal fin by less than two scales of approximately equal size. Five species were included into the genus by Greenwood (1979): *C. pectoralis*, *C. horei*, *C. polli*, *C. oligacanthus* and *C. luluae*.

The new species described herein answers the definition of *Ctenochromis* sensu Greenwood (1979). However, the generic classification of Greenwood (1979, 1980) was not accepted in the Check-List of the Freshwater Fishes of Africa (CLOFFA) (Van Ojien et al., 1991) and by Snoeks (1994) and Van Ojien (1996). In addition, a detailed study of internal and external morphological features of 52 genera (67 species) of Lake Tanganyika cichlid fishes by Takahashi (2003) revealed that the Lake Tanganyika members of the genus *Ctenochromis*, i.e. *C. horei* and *C. benthicola* do not form a monophyletic group. Poll (1986) already attributed with doubt *C. benthicola* to the genus as the species lacks the presence of a scaleless part on the thorax and has more numerous scales rows on the cheek, i.e. 5-6 instead of the presence of a naked area along its ventral margin as reported by Greenwood for all members of the genus. Takahashi (2003) referred to both Lake Tanganyika *Ctenochromis* as "*Ctenochromis*" as he was not able to elucidate their correct generic affiliation by comparison with the type species. In addition, a mtDNA analysis by Salzburger et al. (2005) of about 100 species of haplochromine cichlid fishes including two *Ctenochromis* species, i.e. *C. horei* and *C. oligacanthus*, revealed the genus *Ctenochromis* to be polyphyletic. Also the mtDNA results presented by Koblmüller et al. (2008) support this conclusion. Although the riverine *H. oligacanthus* and *H. polli* form a monophyletic group and are each others sister species they are not related to *H. pectoralis*, type species of the genus, and neither to *H. horei*. Therefore, despite its partially naked thorax the new riverine species from the Inkisi River basin has been attributed to the genus '*Haplochromis*' (see also Hoogerhoud & Witte, 1981) acknowledging both its affinities with *Haplochromis* and the recent molecular data suggesting paraphyly of the genus and a separate lineages for the Congo River basin riverine species.

Contrary to Thys van den Audenaerde (1964) who has collected *H. demeusi* and *H. polli* in the main channel of Congo River, the scientific expedition on Fishes of Lower Congo (MRAC) collected, in 2005, *H. demeusi* in Yambi (a right bank affluent of Congo River), *H. polli* in Mfumu (affluent of Yambi). This last specie was, also collected in Djoué River (affluent of Congo River) and in Loua River (small affluent of Congo River). But in Inkisi basin, only one specie of *Haplochromis* is known at the moment.

Nowadays four endemics to the Inkisi River basin are known: *Aphyosemion labarrei* (Apochelidae, Cyprinodontiformes); *Barbus vanderysti* (Cyprinidae, Cypriniformes); *Schilbe zairensis* (Schilbeidae, Siluriformes) and *Varicorhinus robertsi* (Cyprinidae, Cypriniformes). In addition to these species a new species, *Nannopetersius mutambuei* (Alestidae, Characiformes) has recently been described as a new endemic for the basin (Wamuini & Vreven, 2008). As such, *H. snoeksi* is possibly the sixth fish endemic of the Inkisi River

basin. At present, it is not possible to affirm that it is indeed restricted to the basin. Endemicity of the new species is however not unlikely considering the fact that the Inkisi River basin is well isolated from the main Congo River by the Zongo fall with an approximate height of 58 m and situated approximately 6 km upstream from the confluence with the Congo River. This fall undoubtedly constitutes an important barrier to upstream migration of fishes and as a result isolates the ichthyofauna of the Inkisi River basin from that of the main Congo River channel. These peculiar conditions are likely to have favoured speciation in the Inkisi River basin.

Recently Thieme et al. (2005) assessed the Freshwater Ecoregions of Africa and Madagascar. The Lower Congo (n°22) as well as the Pool Malebo (n°24) ecoregions were both labeled as endangered. In the past mainly the main channel of the Lower Congo River basin has been sampled for its ichthyofauna whereas the affluent river basins have remained largely unexplored. The present paper illustrates the urgent need for further exploration of these affluent river basins to obtain a better knowledge of their unique fish fauna.

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Comparative specimens examined

Haplochromis bakongo: MRAC 142002 (holotype) 75.1 mm SL, DRC: Ngombe River at Banza Mfinda. - MRAC 16960-962 (paratypes), 3, 65.7-80.7 mm SL DRC: at Kidada. - MRAC 16996-999 (paratypes), 4, 56.1-77.7 mm SL, DRC: same data. - MRAC 142010-011 (paratype), 2, 76.0-88.2 mm SL, DRC: Moerbeke (Bas-Congo). *H. burtoni*: MRAC 53170-53200, 28, 44.5-73.7 mm SL, DRC: Tanganyika Lake at Nyanza. *H. demeusii*: MRAC 71, 72.0 mm SL, DRC: at Matadi. - MRAC 118699-705, 6, 43.9-64.2 mm SL, DRC: at Inga. - MRAC A6-07-P-991-1014, 24, 55.2-89.3 mm SL, DRC: Yambi River, at downstream of the fall near Mbanza M'bu, Lower Congo (14°15'49.5"S - 4°52'46.2"S). - MRAC A6-07-P-1015-030, 16, 17.7-85.0 mm SL, DRC: Yambi River, at upstream of the fall, near Mbanza M'bu, Lower Congo (14°15'55.0"S - 4°52'41.8"S). - MRAC A6-07-P-1031-066, 36, 15.0-79.5 mm SL, DRC: Yambi River, same date as for MRAC A6-07-P-1015-030. - MRAC A6-07-P-1067-106, 40, 18.5-72.8 mm SL, DRC: Mfumu River at Yanga, Lower Congo (14°17'51.2"E-4°46'36;4°S). - MRAC A6-07-P-1107-121, 15, 25.5-70.4 mm SL, same data as for MRAC A6-07-P-991-1014. - MRAC A6-07-P-1122-132, 11, 53.6-69.0 mm SL, same data as for MRAC A6-07-P-1067-106. - MRAC A6-07-P-1133-144, 12, 62.9-73.6 mm SL, same data as for MRAC A6-07-P-991-1014. *H. fasciatus*: MRAC 77-25-P-446, 29.9 mm SL, DRC: Mbavu River. - MRAC 77-25-P-447, 21.1 mm SL, DRC: Tshibashi River. - MRAC 48407-415, 7, 71.3-91.6 mm, DRC: at Zambi (Bula). *H. lucullae*: MRAC 78-6-P-1282-285, 4, 59.4-78.3 mm SL, Angola: at derivation of dam of the Caeta River, basin of Lucalla. *H. moeruensis*: MRAC 216 (syntype) 62.5 mm SL, DRC: Lake Moero at Pueto. - MRAC 218 (syntype) 75.3 mm SL, same data. - MRAC 219 (syntype) 64.7 mm SL same data. - MRAC 222 (syntype) 50.4 mm SL, same data. - MRAC 34222-34224, 3, 64.7-67.1 mm SL, DRC: Moero Lake at Lukonjolwa; *H. multiocellatus*: MRAC 78-6-P-1300, 78.3 mm SL, Angola: Moyenne Cuanza river at Quimbargo; *H. oligacanthus*: MRAC 75850, 42.3 mm SL, DRC: Ubangui River at Bosobolo; MRAC 167935, 35.1 mm SL, DRC: Ubangui River at Isato. *H. polli*: MRAC 98258 (holotype), 65.7 mm SL, DRC: at Stanley Pool. - MRAC 44074-44082 (paratypes), 8, 53.7-72.0 mm SL, DRC: at Leopoldville; MRAC 98143-147 (paratypes), 5, 49.1-62.0 mm SL, DRC: Manianga at The rapids of the Congo River. - MRAC 99403-404 (paratypes), 2, 44.3-45.0, DRC: at Stanley Pool. - MRAC A4-46-P-1162-1163, 2, 44.3-44.5 mm SL, Congo (Brazzaville): Loua River, small affluent of Congo River, at Kombé. - MRAC A4-46-P-1164-170, 7, 26.7-47.1 mm SL, Congo (Brazzaville): Djoué River, affluent of Congo River at downstream of hydroelectric dam (Brazzaville). - MRAC A6-46-P-768-771, 4, 57.8-91.6 mm SL, DRC: Langudi River, upstream of the fall at Muyeni (14°18'33.8"E-

4°26'15.0°S). - MRACA6-07-P-772, 59.3 mm SL, same data as for MRAC A6-46-P-768-771. *H. schwetzi*: MRAC 66470 (holotype), 63.0 mm SL, DRC: Kwango River at Guillaume falls; - MRAC 96518-522, 4, 77.2-95.0, DRC: Fua River. - MRAC 164043-047, 5, 40.4-93.2 mm SL, Angola: Cuango-Cafunfo. *H. stappersii*: MRAC 14325 (holotype), 84.4 mm SL: Lufuko River at Mpala. - MRAC 91-030-P-0608, 112.5 mm SL, Burundi: Malagarazi River, fishermen village, Butezi at height of the hill by the track, after the road, towards Giharo. *H. stigmatogenys*: MRAC 2566-2585 (syntypes), 10, 35.1-59.2 mm SL, DRC: at Luluabourg.

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