

Short note/Kurze Mitteilung

New records of fish species in the River Niger at Malanville (North-East Benin)

Neue Belege verschiedener Fischarten im Niger bei Malanville (Nordost-Benin)

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Zusammenfassung: Die Flüsse Niger (sowie einer einer Seitenarme) und Sota in der Kommune Malanville (Nordost Benin) wurden von Juni bis September 2008 befischt. Für *Polypterus endlicheri endlicheri*, *Neolebias unifasciatus* und *Nannocharax ansorgii* konnten Verbreitungslücken geschlossen werden. Zudem wurden erstmals in diesen Flüssen *Barbus bawkuensis* und *Synodontis macrophthalmus* nachgewiesen. Exemplare von *Brycinus leuciscus* wiesen eine deutliche Rotfärbung der Fettflosse auf. Es ist unklar, ob es sich hierbei um eine lokale Farbvariante oder eine neue Unterart/Art handelt.

The study concentrated on the middle Niger at Malanville (North-East-Benin), 1130 km upstream of the estuary, respectively 3050 km downstream from the sources of the Niger (MORITZ et al. 2006), on one of its branches and the river Sota, a tributary with a length of 250 km flowing into the Niger at Malanville (VAN DEN BOSSCHE & BERNACSEK 1990) (fig.1). According to FROESE & PAULY (2010), 261 freshwater fish species are recorded for the river Niger. However, the Niger is crossing different climatic zones several times and, thus, fish communities are expected to change from section to section. MORITZ et al. (2006) assumed that species richness increases towards the estuary. Up to now, 98 species belonging to 22 families are recorded for the middle Niger (LÄE et al. 2004). However, MORITZ et al. (2006) found 98 species at Malanville, but with 17 formerly not yet recorded species for this part of the river. With the recent study we want to complement the annotated list of fishes from the River Niger published by these authors.

Sampling was conducted from June to September 2008 by using a small seine (2 m x 1 m, mesh size 5 mm, see MORITZ et al. 2006) as well

as setting gill nets (30–40 m x 0.5–1.5 m; MS 25–50 mm) overnight. Each habitat was sampled not less than four times. Water chemistry was measured simultaneously by analysing water taken at a depth of 20 cm from the surface between 7.30 h and 12.00 h. Results are listed as mean values in table 1. Water temperature (°C) and oxygen concentration were measured with DO-100 from Voltcraft (accuracy ± 0.4 mg/l), while conductivity and pH-value were analysed applying the HI98129 Combo from Hanna (accuracy ± 1 μ S/cm or 0.01, respectively). Calibrations were conducted according to the manufacturer's recommendations. Nitrite, nitrate, ammonia as well as total phosphorus (P) concentrations (all measured in mg/l) were analysed with the help of colorimetric test kits (Macherey-Nagel).

In total we collected 67 species belonging to 16 families (see HAUBER et al. submitted), thus representing only a proportion of fish species already recorded by MORITZ et al. (2006). Nevertheless, for three species distribution gaps could be closed and for another three species their already known distribution could be expanded.



Fig. 1 (left): Location of the different study sites around Malanville (North-East Benin). 1 = Branch of the river Niger; 2 = River Niger (the black spot illustrates the rice perimeter situated along the river); 3 + 4 = River Sota.

Abb. 1 (links): Lage der verschiedenen Fanggebiete um Malanville (Nordost-Benin). 1 = Seitenarm des Niger; 2 = Niger (die schwarzen Punkte kennzeichnen die Reisfelder entlang des Flusses); 3+4 = der Fluss Sota.

Fig. 2 (below): Life colouration of fish species recorded around Malanville.

Abb. 2 (unten): Lebendfärbung der bei Malanville gefangenen Fischarten.

A *Brycinus leuciscus*, **B** *Brycinus leuciscus* (note the red adipose/man beachte die rote Fettflosse), **C** *Nannocharax ansorgii*, **D** *Neolebias unifasciatus*.



Tab. 1: Water parameters of the different river channels measured from June to September 2008. If possible, data are presented as mean values and their standard mean error. Temp. = Water temperature; DO = dissolved oxygen; EC = electric conductivity; TH = total hardness, and CH = carbonic hardness measured as “degrees deutsche Härte”; P = total phosphorous; SDD = Secchi disc depth.

Tab. 1: Wasserparameter der befischten Flüsse zwischen Juni und September 2008. Soweit möglich, sind Mittelwerte und Standardabweichung angegeben. Temp. = Temperatur; DO = Sauerstoffgehalt; EC = Leitfähigkeit; TH = Gesamthärte und CH = Karbonathärte, angegeben in „Grad deutsche Härte“; P = Phosphatgehalt; SDD = Sichttiefe (Secchi-Scheibe).

Parameters	Temp.	DO	pH	EC	TH	CH	NH ₄	NO ₃	NO ₂	P	SDD
Rivers	(°C)	(mg/l)		(µS/cm)	(°dH)	(°dH)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(cm)
Niger	28,4 (± 1.3)	6,7 (± 0.9)	6,86 (± 0.3)	63 (± 12.5)	3 (± 0)	2 (± 0)	0 (± 0)	5 (± 0)	0,02 -	0 -	7 (± 4.7)
Niger Branch	29,3 (± 1.4)	3,1 (± 0.5)	6,74 (± 0.4)	70 (± 12.2)	3 (± 0.6)	3 (± 0.6)	0 (± 0)	12 (± 2.9)	0,02 (± 0)	0 (± 0)	16 (± 11)
Sota	28,0 (± 1.8)	6,4 (± 0.8)	6,64 (± 0.3)	53 (± 15.3)	2 (± 0)	2 (± 1.4)	0 -	5 -	0,02 -	0 -	16 (± 8.9)

Polypteridae: *Polypterus endlicheri endlicheri* Heckel, 1849 with a standard length (SL) of 325 mm was captured in the Sota. The discovery of this species in a tributary of the Niger proves the expected but hitherto not verified occurrence of this species in this river (MUREI et al. 2003, MORITZ et al. 2006). So far it was only recorded for the Kainji Reservoir and the Niger delta (PAUGY et al. 2003a).

Distichodontidae: With the record of *Neolebias unifasciatus* Steindachner, 1894 another distribution gap was closed. This species was only known from the inland delta of the Niger and its estuary into the Atlantic Ocean and has not yet been found in the middle Niger (GOSSE & COENEN 2003). We found two specimens with 25.9 mm and 24.6 mm SL in the Niger branch and the Sota, respectively.

The high species richness of the genus *Nannocharax* around Malanville was already mentioned by MORITZ et al. (2006). However, the recent study detected one more species, *N. ansorgii* Boulenger, 1911 (35.5 mm SL) which has so far not been found in the Sota (GOSSE & COENEN 2003). Another remarkable observation was a specimen of *N. fasciatus* that carried eggs adherent to all fins except the adipose.

Cyprinidae: To the inventory list of the genus *Barbus* presented by MORITZ et al. (2006) for the Niger at Malanville the species *B. bawkuensis* Hopson, 1965 has to be added. Up to now, *B. bawkuensis* was only known from the Volta and the Sokoto, a tributary of the Niger, and has never been found so far north (PAUGY et al.

2003a). We recorded numerous specimens in river sites with SL ranging from 16.5 to 28.8 mm.

Mochokidae: MURAI et al. (2003) already stated the occurrence of *Synodontis macrophthalmus* Poll, 1971, but the given photograph shows, according to MORITZ et al. (2006), *S. sorex*. *S. macrophthalmus* is recorded from the type locality, at Ampem, Volta basin in Ghana (PAUGY et al. 2003 b), but its distribution can be extended to the river Sota.

Alestidae (formerly Characidae): Numerous specimens of *Brycinus leuciscus* Günther, 1867 were caught in all examined river sites with a SL ranging from 5.38 to 50.7 mm. As already observed by MORITZ (personal communication), some individuals showed a clear reddish coloration of the adipose fin instead of the described yellowish appearance (PAUGY et al. 2003 a). Further studies are needed to clarify if this coloration is just a local variation or if it is a new subspecies/species.

The typical morphological and habitus characteristics of the species listed above are well defined (see e.g. PAUGY et al. 2003 a, b), and therefore not further defined here. The specimens are now deposited at the Goethe University Frankfurt (Germany).

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