

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/255961749>

A new dwarf cichlid (Perciformes) from Nigeria

Article in *Cybius: international journal of ichthyology* · July 2013

CITATIONS

2

READS

401

1 author:



[Anton Lamboj](#)

University of Vienna

29 PUBLICATIONS 92 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Revision of *Hemichromis* [View project](#)

A new dwarf cichlid (Perciformes) from Nigeria

by

Anton LAMBOJ (1)



© SFI
Received: 7 Sep. 2012
Accepted: 18 Jun. 2013
Editor: O. Otero

Abstract. *Pelvicachromis silviae*, a new cichlid species, is described. It differs from congeners by unique coloration of females and a combination of morphological characters, e.g. greater body depth, shorter snout length, greater eye orbit diameter and several other meristic parameters. The species occurs in the lower Niger River system and seems to represent within the genus a closer relative to *P. subocellatus*.

Résumé. Un nouveau cichlidé nain (Perciformes) du Nigeria.

Pelvicachromis silviae, une nouvelle espèce de cichlidé, est décrite. Elle se distingue de ses congénères par la coloration unique des femelles et par une combinaison de caractères morphologiques (plus grande hauteur du corps, museau plus court, diamètre de l'orbite plus grand) et par plusieurs autres paramètres méristiques. L'espèce se trouve dans le système du bas Niger et, au sein du genre, semble être proche de *P. subocellatus*.

Key words

Cichlidae
Pelvicachromis silviae
Niger River
New species

The genus *Pelvicachromis* sensu Thys van den Audenaerde, 1968, contains 10 described species. One additional species is known from a colour slide at least since 1968, as

mentioned in Thys van den Audenaerde (1968). Thys van den Audenaerde received the slide from W. Heiligenberg and transported the species under the name *P. sp. affin. subocellatus*, considering to be a Nigerian subspecies or vicariant species of *P. subocellatus* (Günther, 1871). Subsequently, this name had been used in the aquarium hobby, where over the decades this species had been imported frequently from Nigeria. Curiously, this species is nearly not found in museum collection, and the name used by Thys van den Audenaerde did not occur in any scientific literature (e.g. Greenwood, 1987). The only preserved specimen I could find over the years has been a female in the MRAC collection, deposited as *P. pulcher* (Boulenger, 1901) (see material). No other scientific collection nor any well documented sample by trade or private persons had been available, until 2010, when M. Hakansson from Imazoo (Sweden) had been able to get a commercial import with locality data given by the collector and to make specimens available for a description.

As several observations in aquaria (personal ones and in aquaristic literature, e.g., Linke and Staeck 2002; Lamboj, 2004) had shown several differences of this species to *P. subocellatus*, especially in coloration of females, the general remark of being different to *P. subocellatus*, as indicated in Thys van den Audenaerde (1968), had been confirmed. Regarding to the ongoing trend in zoological taxonomy to get rid of subspecies Thys van den Audenaerde consideration for a subspecies of *P. subocellatus* is here rejected, but

his idea that this species has to be seen as a vicariant species of *P. subocellatus* is followed. It is the aim of this paper to give a formal description of this species.

MATERIAL AND METHODS

External counts and measurements follow Barel *et al.* (1977). 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.

Because of the small number of available material, no clearing and staining of a specimen was done, but situation of infraorbital bones was proved in two specimens by scratching skin on the right side of the head. Abbreviations used are: AMNH, American Museum of Natural History, New York; BMNH, Natural History Museum, London; MNHN, Muséum national d'histoire naturelle, Paris; MRAC, Muséum Royal d'Afrique Centrale, Tervuren; NMW, Naturhistorisches Museum, Wien; ZMA, Zoologisch Museum, Amsterdam; ZSM, Zoologische Staatssammlung München; SL, standard length; HL, head length, SD, standard deviation.

Comparative material

Pelvicachromis humilis. - BMNH 1915.4.13:44, holotype, Sierra Leone: North Sherbo District. MRAC 154802, Sierra Leone: Kasewe Forest. MRAC 154803, Sierra Leone: Kasewe Forest. MRAC 164505, Sierra Leone: Kasewe Forest. MRAC 183575-576, Sierra Leone: Kasewe Forest. MRAC 183577-578, Sierra Leone: Kasewe Forest. MRAC 73-10-P-663-685, Liberia: Bombo-Jet. MRAC 73-10-P-6427-482, Sierra Leone: Pujehun, riv. Waanje et

(1) University of Vienna, Department for Evolutionary Biology, Althanstrasse 14, A-1090 Wien, Austria. [anton.lamboj@univie.ac.at]

marigot. MRAC 73-10-P-6483-528, Sierra Leone: Bayama, marigots de la riv. Waanje. MRAC 73-10-P-6600-620, Sierra Leone: Majihun, marigots d'un ruisseau trib. de la riv. Moa. MRAC 73-10-P-6529-568, Sierra Leone: Tangahun, marigot +/- 12 km SO de Kenema, trib. sup. de la riv. Waanje. MRAC 73-10-P-6569-599, Sierra Leone: Tangahun, marigot +/- 12 km SO de Kenema, trib. sup. de la riv. Waanje. MRAC 73-10-6636-643, Liberia: Gwene-Town, marigots pr de la riv. Loffa. MRAC 73-10-P-7802-861, Sierra Leone: Towahun-Tangahun. MRAC 92-59-P-2644-2652, Guinea: Kambo river, affl. Bofou (basin Forecariah) en gu de Franciga, 09 2, 13 01. AMNH 12317, Liberia: near Kaleata. AMNH 97493, Sierra Leone: Bandujuma, Waanje River. AMNH 97494, Liberia: Gbanga, in small creek tributary to St. Paul River. AMNH 97495, Sierra Leone: Tiwai Island. AMNH 97496, Sierra Leone. AMNH 97497, Sierra Leone: Tiwai island. AMNH 97498, Sierra Leone: Gola North Forest Reserve, large pool by village 5 miles from Lalehun along Joru Road. AMNH 97499, Sierra Leone: small stream behind village ca. 2 km east of Kambama Village. AMNH 97500, Sierra Leone: small stream behind Kambama Village. AMNH 97501, Sierra Leone: Gola North Forest Reserve, large pool by village 5 miles from Lalehun along Joru Road. AMNH 97502, Sierra Leone: small stream behind Kambama Village. AMNH 97503, Sierra Leone: River Moa. AMNH 97405, Sierra Leone: River Moa. AMNH 97505, Sierra Leone: River Moa.

Pelvicachromis kribensis (revalidation Lamboj *et al.*, under review). - BMNH 1902.11.12.164-165 and BMNH 1912.6.29.19-28, 7 males, syntypes, 5 females, 1 ex., 28.5-52.4 mm SL, Cameroon, Kribi River at Kribi, South Cameroon. NMW 95240, 3 females, 31.7-36.2 mm SL, Cameroon, Nyong River system, small creek at region of Dehane, 03 9.087, 10-06.311, coll. A. Lamboj. NMW 95241, 1 male, 1 female, 42.3 + 45.7 mm SL, Cameroon, Moliwe River at village of Moliwe, 04 3.997-09 5.288, coll. A. Lamboj. NMW 95242, 3 males, 3 females, 39.3-51.0 mm

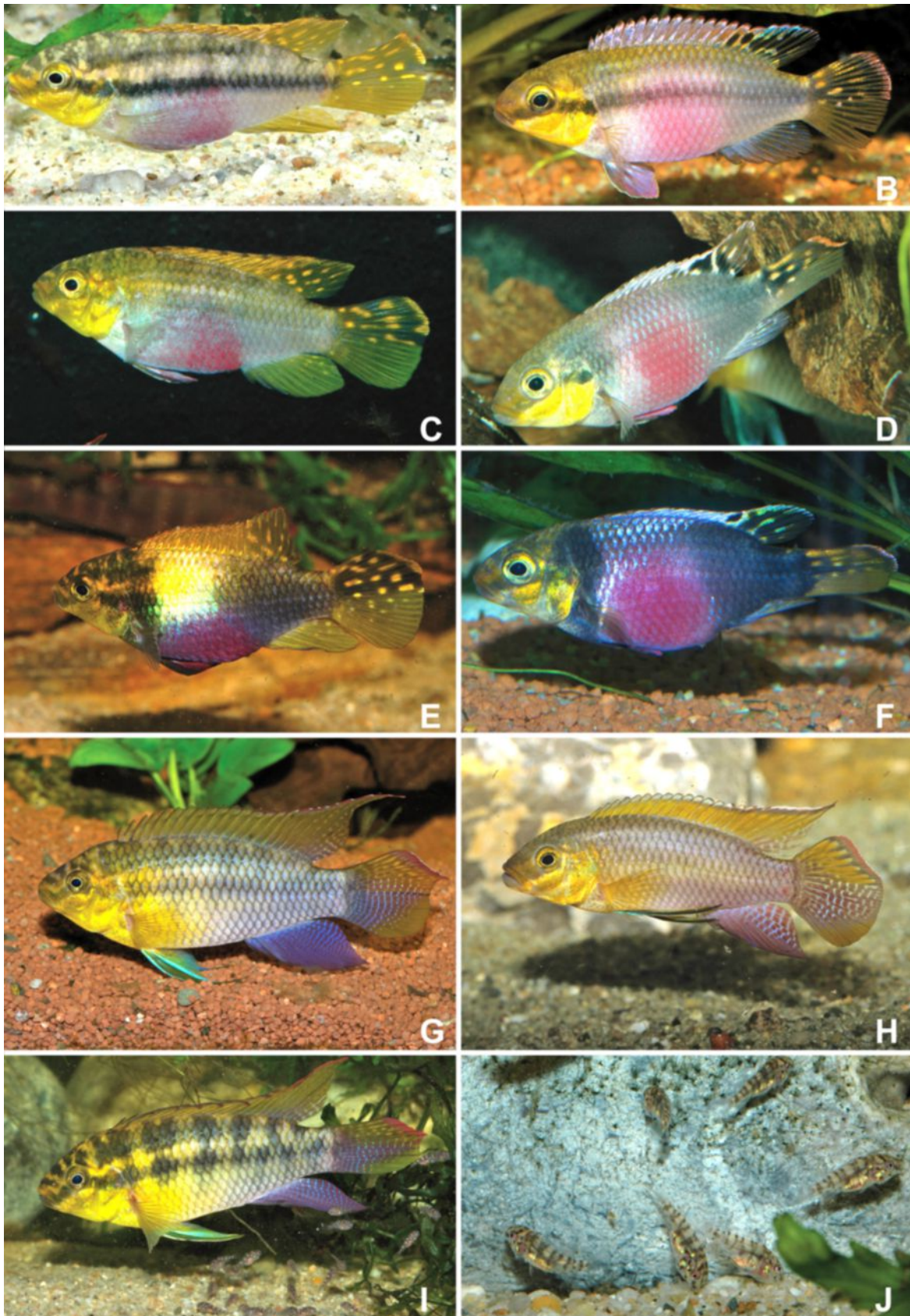
SL, Cameroon, Lobe River system, small creek near village of Massa, 02 2.384, 09 54.096, coll. A. Lamboj.

Pelvicachromis pulcher. - All from Nigeria, Niger River system. BMNH 1901.1.28.13-20, syntypes, 5 males, 3 females, 55.7-90.0 mm SL, Mouth of Ethiop River, Sapele station, coll. W.J. Ansorge. BMNH 1902.11.10.221-228, 4 males, 4 females, 31.7-45.7 mm SL, Assay, coll. W.J. Ansorge. BMNH 1902.11.10.229-230, 1 male, 1 female, 29.2-32.7 mm SL, Agbera, coll. W.J. Ansorge. BMNH 1912.2.2.9, male, 50.1 mm SL, Wari, lower Niger, coll. J.P. Arnold. BMNH 1984.7.27.1048-1053, 1 male, 4 ex., 20.6-34.2 mm SL, Akio, Aye River, 06 4 4 30-03 4 5, coll. D.H.J. Sidenham. MRAC 154804-807, 2 males 2 females, 46.9-68.2 mm SL, Lagos, 06 7 7-03 2 3, coll. F. Gagelmann, Mar. 1951. MRAC 154809-810, 2 males, 66.1-70.6 mm SL, Sapele, 05 5 5-05 4 2, coll. F. Gagelmann, Jan. 1951. MRAC P 154821, female, 53.3 mm SL, Lagos, 06 7 7-03 2 3, coll. F. Gagelmann, Jun. 1951. MRAC 84-20-P-262, female, 56.8 mm SL, New Calabar River, 04 5 5-06 5 2, coll. L. Risch, Mar. 1984. MRAC 84-51-P-17, male, 48.2 mm SL, 2 km SW of Aking (Awsawmba, Cross River State, 05 4 4-08 3 0, coll. J.C. Reid, Oct. 1980. MRAC 84-51-P-68-69, 2 males, 38.2-41.1 mm SL, Ayip Eku Palm Oil Estate, Cross River State, 05 4 4-08 4 2, coll. J.C. Reid, Sep. 1980. MRAC 86-08-P33, male, 65.3 mm SL, Umuayara village, Mba Etche Kelga, Rivers State, 05 2 2-07 0 6, coll. P.J. Akirir, Oct. 1983. MRAC 86-08-P-34, male, 71.5 mm SL, Sombreiro River, coll. P.J. Akiri, Aug. 1985. MRAC 86-10-P-101, male, 66.4 mm SL, Nun River, 05 07 4-06 1 1, coll. P.J. Akiri, Nov. 1985. MRAC 88-35-P 434-435, 2 males, 75.6-77.1 mm SL, New Calabar River, 04 5 5-06 4 9, coll. C.B. Powell, Jan. 1986. MRAC 88-35-P-436-438, 2 males, 1 female, 57.869.4 mm SL, 3 km south of Isiokpo, New Calabar, coll. C.B. Powell, Jan. 1988. MRAC 88-43-P-439-442, 2 males, 1 female, 40.7-52.2 mm SL, Taylor Creek at Joinkrama, 05 1 1-06 3 0, coll. C.B.



Figure 1. - *Pelvicachromis silviae*, NMW 95243, male, 47.8 mm SL; Nigeria, Niger River system, river Uwerum, near village of Ughelli, app. 5 3 0-5 3 9, Delta State, coll. E. Ajih, Feb. 2009. Scale bar = 10 mm.

Figure 2 (right). - Coloration patterns of *P. silviae* for both sexes in different behavioural situations, in comparison with *P. subocellatus* from Lower Congo, Moanda region. All specimens imported for ornamental fish trade, not preserved, not measured. **A:** Female of *P. silviae*; **B:** Female of *P. subocellatus*, both in normal coloration, possessing the two lateral bands; **C:** Female of *P. silviae*; **D:** Female of *P. subocellatus* in normal coloration without lateral bands; **E:** Female of *P. silviae*; **F:** Female of *P. subocellatus* in courting display; **G:** Male of *P. silviae*; **H:** Male of *P. subocellatus*; **I:** Male of *P. silviae* guarding fry, notice the pattern of diffuse vertical bars from dorsum to mid-body; **J:** Juveniles of *P. silvae* with an age of about 2 weeks, before getting adult coloration.



Powell, Feb. 1988. MRAC 90-019-P-0463-0489, 16 males, 11 females, 31.564.2 mm SL, New Calabar River, 3 km south of Isiokpo, 04°37'N-06°33'E, coll. C.B. Powell, May 1988. MRAC 91-01-P-411-414, 4 males, 35.8-54.7 mm SL, Taylor Creek, 05°4'N-06°32'E, coll. C.B. Powell, Dec. 1990. MRAC 91-067-P-0549, female, 43.4 mm SL, Okoso Creek, 05°08'N-06°33'E, coll. C.B. Powell, Jul. 1991. MRAC 91-055-P-0602-0603, 1 male, 1 female, 50.9-56.8 mm SL, Orashi River, 05°01'N-06°47'E, coll. C.B. Powell, Jun. 1991. MRAC 91-010-P-0653, male, 48.4 mm SL, Orashi River, 05°01'N-06°47'E, coll. C.B. Powell, Jan. 1988. MRAC 92-014-P-0125, male, 53.7 mm SL, Orashi River at Odieke, 05°01'N-06°47'E, coll. C.B. Powell, Nov. 1991. MRAC 93-039-P0147-0148, 2 males, 44.5-54.1 mm SL, Kwa Ibo River, 04°44'N-08°02'E, coll. R.P. King, Jul. 1992.

Pelvicachromis roloffi. - All from Sierra Leone, Kwabolake, Sherbo District; Griffin-Cadenot: MRAC 73399, holotype. MRAC 733400, allotype. MRAC 73401-402, paratypes.

Pelvicachromis rubrolabiatus. - All Guinea: Kolente basin, Badi River; coll. S. Sidibe. NMW 94835, holotype, male, 59.5 mm SL. NMW 94836, paratype, 1 female, 35.7 mm SL. MRAC A2-011-P-19-20, paratypes, 1 male, 1 female 65.2-48.1 mm SL.

Pelvicachromis sacrimontis. All from Nigeria. MRAC 86-10-P-102, neotype, male, 66.4 mm SL, Nigeria: Chokoche, Imo River, Rivers State, 04°39'N-07°39'E, coll. P.J. Akiri, Aug. 1985. MRAC 138748-138755, paraneotypes, 8 males, 68.5-77.8 mm SL, dAba, coll. E.R. Smykala & van de Weyer, 1967. MRAC 154410-154412, paraneotypes, 2 males, 1 female, 57.4-77.6 mm SL, dAba, 05°07'N, 07°22'E, coll. E.R. Smykala, Jan. 1965. MRAC 154513-154514, paraneotype, 1 male, 1 ex., 56.2-57.9 mm SL, dAba, 05°07'N-07°22'E, coll. E.R. Smykala, Jan. 1967. MRAC 154520-154530, paraneotypes, 3 females, 2 ex. 34.1-49.2 mm SL, dAba, 05°07'N-07°22'E, coll. E.R. Smykala, Jan. 1967. MRAC 86-08-P-33, paraneotype, male, 65.3 mm SL, Umuayara Village, Mba Etche, Kelga Rivers State, coll. P.J. Akiri, Oct. 1983. MRAC 86-08-P-34, paraneotype, male, 71.5 mm SL, Odiemudie, Sombreiro River, Rivers State, coll. P.J. Akiri, Oct. 1983. MRAC 86-10-P-101, paraneotype, male, 66.4 mm SL, Okosos, Nun River, Rivers State, coll. P.J. Akiri, Nov. 1985. MRAC 86-10-P-103, paraneotype, male, 66.0 mm SL, same collection data as neotype. MRAC 88-37-P-138-142, paraneotypes, 1 male, 2 females, 2 ex., 32.8-90.6 mm SL, River Umuayara at Umuede about 25 km NNW of Port Harcourt, coll. T. Roberts, Jun. 1987. MRAC 93-039-P-0149-0150, paraneotypes, 2 males, 65.8-65.9 mm SL, Abak, Kwa Ibo River, 04°39'N-07°47'E, coll. R.P. King, Feb. 1992.

Pelvicachromis signatus. - All from Guinea: Kolente basin, Bandi River, route Kangasili-Sougeta, 10°1'N-12°28'W, J. Van Orshoven, Dec. 1966-Jan. 1967 and Dec. 1968. ZMA 109.959, holotype, male, 72.3 mm SL; ZMA 109.960, paratype, 1 female, 52.2 mm SL. ZMA 114.995, paratypes, 5 males, 58.0-79.0 mm SL. ZMA 114.996, paratypes, 2 females, 38.1-51.9 mm SL. MRAC 77-10-P-2-5, paratypes, 2 males, 2 females, 52.1-71.5 mm SL.

Pelvicachromis sp. aff. *taeniatus* Wouri - NMW 95237, male, 60.3 mm SL, Cameroon, Wouri River system, Region

of Yabassi, tributary of Wouri River on Road Douala-Yabassi, 04°8.250'N-10°02.971'E, coll. by Cyrille Dening, 3 Oct. 2011. NMW 95238, 4 males, 6 females, 34.1-46.9 mm SL, same as NMW 95237. NMW 95239, 13 males, 1 female, 2 juveniles, 21.1-42.0 mm SL, same locality data as NMW 95237 but collected by A. Lamboj, 21 Feb. 2009. MRAC B2-19-P-1-4, 2 males, 2 females, 33.8-47.9 mm SL, same collecting data as NMW 95239. AMNH 255627, 2 males, 2 females, 32.9-48.6 mm SL, same collecting data as NMW 95239. ZSM 41742, 2 males, 2 females 28.8-39.7 mm SL, same collecting data as NMW 95239.

Pelvicachromis subocellatus. - All from Gabon: BMNH 1872.1.27.14-15, syntypes. MRAC 144619-144630, Moanda.

Pelvicachromis taeniatus. - BMNH 1901.1.28.21, holotype, male, 60.3 mm SL, Nigeria, mouth of Ethiop River, Niger Delta (Sapele Station), coll. W.J. Ansorge. AMNH 97565, 1 male, 2 females, 36.3-58.3 mm SL, Nigeria, Niger River system.

SYSTEMATICS

Pelvicachromis silviae, new species (Figs 1, 2)

Holotype. - NMW 95243, male, 47.8 mm SL; Nigeria, Niger River system, river Uwerum, near village of Ughelli, app. 5°30'N, 5°39'E, Delta State, coll. E. Ajih, Feb. 2009.

Paratypes. - NMW 95244, 2 males, 3 females, 35.7-41.5 mm SL, same as holotype. MRAC 91-067-P-0549, female, 43.9 mm SL, Nigeria: Niger River system, Okoso Creek, 5°08'N-6°33'E, coll. C.B. Powell, Jul. 1991. MRAC B2-22-P-1-2, 1 male, 1 female, 33.3 + 43.9 mm SL, same as holotype.

Diagnosis

A species of *Pelvicachromis*, distinguished from congeners by a combination of characters as follows: Differs from *P. subocellatus* in somewhat greater body depth (37.4-43.0% SL vs. 34.5-41.6%, mean 39.2 vs. 37.3%), shorter snout length (20.4-28.1% HL vs. 23.4-30.9%, mean 24.9 vs. 26.7%), greater eye orbit diameter (31.3-35.7% HL vs. 28.9-32.9%, mean 33.0 vs. 30.5%), greater lower jaw length (30.9-38.5% HL vs. 25.4-35.3%, mean 35.1 vs. 30.9%), lesser scales between pelvic and pectoral fin (3-5 vs. 5-6), in males in lappet-like elongation of some rays of caudal fin (vs. no such elongation) and in females in greenish and yellow coloured parts on dorsal parts of body, situated over red belly region (vs. silver coloured scales around red belly region). Differs from *P. sacrimontis* Paulo, 1977 in greater body depth (37.4-43.0% SL vs. 29.0-36.5%, mean 39.2 vs. 33.3%), greater head length (33.2-36.9% SL vs. 27.0-32.0%, mean 35.4 vs. 28.9%), greater caudal peduncle depth (15.8-17.5% SL vs. 14.0-15.3%, mean 16.8 vs. 14.7%), shorter snout length (20.4-28.1% HL vs. 26.2-38.7%, mean 24.9 vs. 32.3%), greater postorbital distance (40.4-45.7% HL vs. 31.7-41.8%, mean 42.1 vs. 37.0%), shorter interorbital dis-

tance (24.0-27.9% HL vs. 29.4-45.3%, mean 25.6 vs.36.0%), shorter preorbital distance (16.3-17.3% HL vs. 18.7-26.5%, mean 16.9 vs. 22.4%). Differs from *P. pulcher* in greater body depth (37.4-43.0% SL vs. 32.6-38.3%, mean 39.2 vs. 35.4%), greater head length (33.2-36.9% SL vs. 27.8-32.0%, mean 35.4 vs. 29.5%), greater caudal peduncle depth (15.8-17.5% SL vs. 13.0-15.3%, mean 16.8 vs. 14.5%), shorter caudal peduncle length (12.4-14.5% SL vs. 13.8-16.5%, mean 13.1 vs. 14.9%), shorter snout length (20.4-28.1% HL vs. 27.6-36.6%, mean 24.9 vs. 30.9%), greater postorbital distance (40.4-45.7% HL vs. 34.8-40.4%, mean 42.1 vs. 38.2%), shorter interorbital distance (24.0-27.9% HL vs. 25.9-33.1%, mean 25.6 vs.30.4%), shorter preorbital distance (16.3-17.3% HL vs. 21.0-33.8%, mean 16.9 vs. 24.9%). Differs from *P. roloffii* (Thys van den Audenaerde, 1968) in greater body depth (37.4-43.0% SL vs. 33.6-37.6%, mean 39.2 vs. 35.9%), greater head length (33.2-36.9% SL vs. 31.5-33.0%, mean 35.4 vs. 32.2%), greater caudal peduncle length (15.8-17.5% SL vs. 9.4-12.2%, mean 16.8 vs. 10.7%), higher number of pored scales of lateral line (26-28 vs. 24-26). Differs from *P. taeniatus* (Boulenger, 1901) in greater body depth (37.4-43.0% SL vs. 29.9-36.4%, mean 39.2 vs. 34.6%), greater head length (33.2-36.9% SL vs. 28.4-33.8%, mean 35.4 vs. 31.4%), greater pre-anal distance (66.2-69.8% SL vs. 62.8-66.7%, mean 68.3 vs. 65.6%), greater prepelvic distance (37.9-44.3% SL vs. 36.0-37.5%, mean 39.8 vs. 36.9%), shorter preorbital distance (16.3-17.3% HL vs. 18.6-21.1%, mean 16.9 vs. 20.2%), fewer spines in dorsal fin (14-16 vs. 17-18). Differs from *P. kribensis* (Boulenger, 1911) (revalidation Lamboj *et al.*, under review) in greater body depth 37.4-43.0% SL vs. 30.4-37.3%, mean 39.2 vs. 33.2%), greater prepelvic distance (37.9-44.3% SL vs. 32.5-37.7%, mean 39.8 vs. 35.1%), shorter preorbital distance (16.3-17.3% HL vs. 17.0-22.3%, mean 16.9 vs. 19.1%), lesser spines in dorsal fin (14-16 vs. 17-18). Differs from *P. sp. aff. taeniatus* Wouri in greater body depth (37.4-43.0% SL vs. 28.7-35.1%, mean 39.2 vs. 32.3%), greater prepelvic distance (37.9-44.3% SL vs. 33.4-39.5%, mean 39.8 vs. 36.5%), greater eye orbit diameter (31.3-35.7% SL vs. 22.6-32.5%, mean 33.0 vs. 28.6%), more slender caudal peduncle (caudal peduncle length 73.2-85.3% of caudal peduncle depth vs. 93.9-124.6%, mean 78.1 vs. 106.0%), fewer spines in dorsal fin (14-16 vs. 17-18).

Differs from *P. humilis* (Boulenger, 1916), *P. rubrolabiatus* Lamboj, 2004 and *P. signatus* Lamboj, 2004 in absence of 7-8 vertical bars on body, visible in several behavioural situations, in three infraorbital bones vs. two, in greater body depth (37.4-43.0% SL

vs. 26.4-34.1%), shorter caudal peduncle length (12.4-14.5% SL vs. 13.1-18.1%), greater anal-fin base length (18.6-22.5% SL vs. 13.6-21.0%), shorter snout length (20.4-28.1% HL vs. 25.3-43.0%), greater interorbital distance (24.0-27.9% HL vs. 18.2-25.6%), shorter preorbital depth (16.3-17.3% HL vs. 19.8-28.7%).

Description

Measurements and counts for holotype and 8 paratypes are given in table I.

Body moderately elongate, head relatively short but deep (head depth 59.0-70.1 % HL). Jaws isognathous. Dorsal

Table I. - Morphometrics and meristics of the holotype and of eight paratypes (range) of *Pelvicachromis silviae*.

	Holotype	Mean	SD	Range
Standard length in mm	47.8	39.4		33.3-47.8
% of standard length				
Body depth	38.7	39.2	1.6	37.4-43.0
Head length	35.2	35.4	1.2	33.2-36.9
Caudal peduncle length	12.6	13.1	0.7	12.4-14.5
Caudal peduncle depth	17.3	16.8	0.6	15.8-17.8
Length of dorsal-fin base	59.3	58.5	2.9	51.6-61.4
Length of anal-fin base	21.6	21.2	1.2	18.6-22.5
Predorsal distance	29.4	29.2	2.6	25.3-33.2
Preanal distance	67.3	68.3	1.3	66.2-69.8
Prepectoral distance	36.1	36.4	2.5	32.8-41.9
Prepelvic distance	39.5	39.8	1.9	37.9-44.3
% of head length				
Head depth	65.5	65.1	3.1	59.0-70.1
Snout length	27.4	24.9	2.9	20.4-28.1
Eye diameter	31.3	33.0	1.5	31.3-35.7
Postorbital distance	41.4	42.1	1.9	40.4-45.7
Interorbital distance	27.9	25.6	1.2	24.0-27.9
Cheek depth	27.8	27.2	2.6	24.2-33.2
Lower jaw length	38.5	35.1	2.4	30.9-38.5
Preorbital distance	17.0	16.9	0.3	16.3-17.3
% of caudal peduncle depth				
Caudal peduncle length	73.2	78.1	3.8	73.2-85.2
Meristics		median		
Upper lateral-line scales	18	19		17-20
Lower lateral-line scales	8	6		5-9
Total lateral-line scales	28	28		26-28
Circumpeduncular scales	16	16		16
Dorsal-fin spines	14	15		14-16
Dorsal-fin rays	10	10		9-10
Anal-fin spines	3	3		3
Anal-fin rays	8	8		7-8
Pectoral-fin rays	13	13		12-13
Gill rakers on lower limb of first arch	10	9		7-10
Total gill rakers on first arch	14	15		12-16

head profile slightly rounded. Dorsal profile curving gently downward along length of dorsal fin base. Ventral profile gently rounded in males and non-ripe females, more rounded in ripe females. Sexual dimorphism and dichromatism well developed. First ray of pelvic fin always longest in males, tip of pelvic fin reaching anterior base of anal fin or beyond. In females, first ray of the pelvic fin shorter or of equal length to second ray. Caudal fin mostly rounded in both sexes, but with some elongated rays in upper portion in males, forming a small lappet. Some rays in posterior parts of dorsal and anal fins pronounced, but always much longer in males. Adult males usually 15-25% larger in TL than females.

Osteology and dentition. Infraorbital series with lachrymal and three additional tubular bones, with a distinct gap between second and third (dermosphenotic) tubular infraorbital. Lachrymal with four laterosensory pores.

Premaxilla with 2 rows, dentary with 2 or 3 rows of regularly set unicuspid teeth. Anteriorly in lower jaw a few teeth are slightly rotated and point inward.

Gill rakers on first gill arch. Seven to 10 tuberculate gill rakers on ceratobranchials, 5-6 pointed gill rakers on epi-branchials. Well-developed hanging pad on roof of the pharynx.

Scales

Cycloid, 1-3 rows of scales on cheek; 4 horizontal rows on opercle. Dark spot on outer edge of opercle unscaled. Chest-scales smaller than body scales, 3-5 scales between pectoral and pelvic fins. Upper lateral-line separated from dorsal-fin base anteriorly by three scales, at 8th pored scale by one or one and a half scales, and at last pored scale by a half to one and a half scale. End of upper lateral-line never overlapping lower lateral-line, separated from beginning of lower lateral line by 1-3 rows of scales. About 1/3-1/4 of caudal fin covered with scales, all other fins unscaled.

Coloration

Live specimens of both sexes are shown in figure 2. Head and body pale brown to yellowish brown. Dorsum a bit darker than ventral parts of body. Dark scaleless spot on outer edge of opercle. Upper and lower lips yellow to brown. A black mid-lateral band from posterior edge of opercle extending to end of caudal peduncle, not reaching into caudal fin. A black dorsolateral band reaching from front of head to about end of dorsal fin, contiguous with a soft dorsal-fin base at most posterior parts, separated from mid-lateral band by a pale, yellowish to brownish band of about equal depth than dark mid-lateral band. Two dark interorbital stripe and a



Figure 3. - Distribution map for *Pelvicachromis* species: (◄) *P. humilis*, (■) *P. signatus*, (●) *P. rubrolabiatus*, (▲) = *P. roloffii*, (▼) *P. pulcher*, (◈) *P. taeniatus*, (×) *P. kribensis*, (☆) *P. sacrimontis*, (★) *P. silviae*, (✱) *P. subocellatus*, (✳) *P. sp. aff. taeniatus* □Wouri□

dark stripe from lower parts of anterior edge of eye to angle of mouth.

All dark bands can disappear in several behavioural situations, e.g., dominant and aggressive or courting specimens. Sometimes the two longitudinal bands on body can be disentangled to dark blotches, but connected with dark vertical coloration so that it gives an impression of dark vertical bars from dorsum to middle of body; this pattern is often to see in specimens doing broodcare.

A pale bluish to turquoise iridescent stripe can appear on ventral and posterior edge of preopercle. Eye golden-yellow to brownish. Pelvic fins with a blue margin on anterior edge, followed by a blackish submargin and a thin, iridescent blue band; rest of this fin reddish to violet. Pectoral fins clear to pale yellowish.

Male specific coloration. - Dorsal fin with red margin, followed by a white submargin. Rest of this fin yellow, with blackish dots, reddish in most posterior parts, or bands in soft dorsal parts. Caudal fin with thin white margin on posterior parts of upper half, followed by a broader red submargin. Rest of upper parts of this fin yellow with a number of dark, mostly diffuse dots. Lower parts of caudal fin with broad yellow margin, central regions wine red with 8-10 rows of blue small dots. Anal fin wine red with many rows of small blue dots, more prominent in outer parts of the fin. Lower parts of head, most anterior parts of body, flanks and breast with yellow hue. Body scales with dark margins. Colorations more intense in courting or dominant-aggressive specimens.

Female specific coloration. - Anterior parts of dorsal fin iridescent yellow, with thin dark margin and pale submar-

Figure 4 (right). - Life coloration of *Pelvicachromis* species and populations of Nigeria, all aquarium trade if not otherwise indicated, left column males, right column females. All specimens not measured, not preserved. A: *P. pulcher* blue morph; B: *P. pulcher* red morph; C: *P. taeniatus* yellow morph with red cheek bar from Benin (Iguidi River); D: *P. taeniatus* green morph from Warri region, Nigeria; E: *P. sacrimontis* red morph; F: *P. sacrimontis* yellow morph.



gin. Soft dorsal parts yellow, with several diffuse darkish blotches. Some specimens with one or two prominent black dots in soft dorsal. Caudal fin yellowish, with diffuse darkish to blackish bands and/or blotches in upper half, lower half with just very few or no blotches and sometimes few very prominent bright yellow dots. Anal fin yellowish, with some pale bluish dots in most posterior parts. Belly wine red to violet, mid-regions of body (between red belly and black mid-lateral band) iridescent bluish to turquoise. Anterior parts of flanks and breast pale yellow to whitish. Cheek, opercle and preopercle yellow. Ripe and courting or aggressive females: Yellow coloration in dorsal, caudal and anal fins much brighter. Mid-body parts: Belly bright wine-red, bordered dorsally at about mid body by a iridescent whitish to bluish or turquoise band; between this and dorsal fin-base bright iridescent yellow. Body parts posterior of this to end of caudal peduncle dark to black. Anterior of mid-body to outer edge of opercle mostly brownish-black, few yellow coloured scales may occur. No lateral bands on body visible. Yellow coloured parts on head more intense and brighter than in normal coloration.

Juveniles of both sexes (before acquiring adult coloration) exhibit a pattern of brownish to blackish vertical double-bands from dorsum to about mid-body, up to about 12-15 mm SL. With increasing size, sex-specific coloration is seen.

Preserved specimen coloration. - Head and body brown, darker dorsally (Fig. 1). Dark spot on outer edge of opercle. Both dark longitudinal stripes visible in most individuals, reaching from posterior edge of eye to end of caudal peduncle. Six-7 darkish, vertical bands from dorsal fin-base to middle of body visible in some individuals. Dark blotches visible in soft dorsal parts, caudal fin parts and anal fin parts in males. Some females with dark dot in soft dorsal.

Breeding behaviour. - In aquaria, this species is a monogamous, pair bonding cave-spawner. Eggs are guarded by both sexes, but always much more intensively and more often by the female. Hatching occurs after three days post-spawn. Larvae are usually deposited on the bottom of the cave. Juveniles are free swimming 8 or 9 days post-hatching and guarded by both parents for about 5 to 8 weeks. Breeding and guarding individuals of both sexes exhibit a more prominent midlateral black stripe or more often a pattern of 6 to 8 unregular and more diffuse vertical dark bands from dorsal fin-base to middle of body, built by disentangling the two lateral bands and connecting the remaining blotches by darkish coloration. In general, breeding behaviour is typical for breeding and guarding specimens of both sexes in many other cave breeders within the chromidotilapiine lineage, especially in congeners.

Distribution

Possibly endemic in tributaries and of the most lower

parts of the Niger River system (Fig. 3).

Etymology

Dedicated to my wife Silvia as a thank you in accepting long absences of mine in mind and body, and in endurance of my usage of many resources for my work. Without her understanding and support, all my works would never have been possible.

CONCLUSIVE REMARKS

As mentioned in the introduction, it is a bit curious that this new species was nearly never noticed in most of the scientific literature and was not found in some numbers in museum collections, although it is relatively common in the aquarium hobby and is frequently imported in good numbers to Europe and North America for ornamental fish trade (pers. inf.), which indicates that this species seems not to be rare. Nevertheless, Thys van den Audenaerde recognised this species as either a subspecies of *P. subocellatus* or a species of its own. As common for most genera of chromidotilapiine cichlids, so for *Pelvicachromis* too, anatomical and morphological differences within a genus are often weak or absent (Lamboj and Stiassny, 2007), and between more close related species coloration differences can be minor too, at least for one sex of the species (e.g. Lamboj *et al.*, under review). Nevertheless, within a species distribution area, variation within a species is minor and always smaller than differences/variation between the given species.

Regarding to geographical and coloration patterns, several possibly closer related groups within *Pelvicachromis* have to be recognized. In West African region (countries of Guinea, Sierra Leone and Liberia) occurs the *P. humilis* group with three species (*P. humilis*, *P. rubrolabiatus*, *P. signatus*), which in fact may represent a genus of its own in cause of some morphological and molecular differences to remaining congeners, as indicated recently (Lamboj *et al.*, under review, and pers. results), and *P. roloffi*, which maybe is a bit isolated from remaining congeners. From about central parts of Liberia to east Benin no natural occurrence of the genus had ever been reported. From the most eastern parts of Benin to the Lower Congo region but not occurring in the Congo River system and with a concentration of species in Nigeria and Cameroon three groups can be determined, regarding to basic coloration patterns: the *P. taeniatus* group with three different species (*P. sp. aff. taeniatus* Wouri, *P. kribensis*, *P. taeniatus*); the *P. pulcher* group with two species (*P. pulcher*, *P. sacrimontis*); and the *P. subocellatus* group with *P. subocellatus* and *P. silviae* sp. nov. The first species occurs from Gabon to the Democratic Republic of Congo, and the latter is restricted to Nigeria (Fig. 3). So, members of the genus can be found in three ichthyofaunical provinces of Afri-

ca: Nilo-Sudan, Upper Guinea and Lower Guinea, what can be interpreted as a combination of type 8 and 11- typology of distribution, regarding Lévêque (1997, pp. 112-120).

Differences between the groups are relatively easy to recognise in coloration (for coloration of Nigerian *Pelvicachromis* species, see Fig. 4), often less in anatomical and morphological characters, but small within the groups. Nevertheless, our current knowledge and regarding the few molecular works on these species, also in addition of behavioural observations in aquaria, no fact works again the determination of valid species or at least subspecies. Moreover, upcoming DNA works are supporting the concept of species recognition by coloration patterns (e.g., Lamboj *et al.*, under review, and pers. results). But even when descriptions of subspecies would fit taxonomical concepts and follow the regulations for taxonomy in forming a trinomen, it is an ongoing trend in zoological taxonomy to get rid of subspecies. Additionally, a use of a subspecies name for a geographical unit would possibly violate articles 12 and 13 of the Code for Zoological Nomenclature in requiring a diagnose (Kullander, pers. com.). Therefore the idea for this new species described herein in being a subspecies of *P. subocellatus* is rejected and *P. silvae* is described as a species of its own.

Acknowledgements. - I thank the following persons and institutions for help and discussion of my work or loan of material: M. Stiassny, B. Schelly (AMNH), James Maclaine (BMNH), J. Snoeks, M. Parrent (MRAC), P. Pruvost (MNHN), U. Schliwen (ZSM), E. Mikschi (NMW). Thanks to friends and colleagues for their help in getting aquarium specimens of the new species over the years: E.v. Genne (Netherlands) who gave me the first pair of this species in 1981, I. Koslowski (Gelsenkirchen, Germany), H. Gruber (Gmunden, Austria), F. Schäfer (Rodgau, Germany). Very special thanks to M. Hakansson (Trollhattan, Sweden) who made it possible to get material with locality data, and made the description possible.

REFERENCES

- BAREL C.D.N., OIJEN M.J.P., WITTE F. & WITTE-MAAS E.L.M., 1977. - An Introduction to the taxonomy of the Haplochromine Cichlidae from Lake Victoria. *Neth. J. Zool.*, 27(4): 333-389.
- GREENWOOD P.H., 1987. - The genera of pelmatochromine fishes (Teleostei, Cichlidae). A phylogenetic review. *Bull. Br. Mus. (Nat. Hist.), Zool. Ser.*, (53): 139-203.
- LAMBOJ A., 2004. - The Cichlid Fishes of Western Africa. 255 p., Bornheim: Birgit-Schmettkamp-Verlag.
- LAMBOJ A. & STIASSNY L.M.J., 2007. - *Pelvicachromis* Thys van der Audenaerde, 1968. In: Poissons d'eaux douces et saumâtres de Basse Guinée, Afrique centrale de l'Ouest (Stiassny L.M.J., Teugels G.G. & Hopkins C.D., eds), pp. 313-319. MRAC/ORSTOM.
- LÉVÊQUE C., 1997. - Biodiversity Dynamics and Conservation: The Freshwater Fish of Tropical Africa. 438 p. Cambridge, UK: Cambridge Univ. Press.
- LINKE H. & STAECK W., 2002. - Afrikanische Cichliden I □ Buntbarsche aus Westafrika. 5. komplett überarbeitete Auflage. 232 p. Bissendorf, Germany: Tetra Verlag.
- THYS VAN DEN AUDENAERDE D.F.E., 1968. - A preliminary contribution to a systematic revision of the genus *Pelmatochromis* Hubrecht *sensu lato* (Pisces, Cichlidae). *Rev. Zool. Bot. Afr.*, 77: 3-4.