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Annals and Magazine of Natural History: Series 8

Publication details, including instructions
for authors and subscription information:
<http://www.tandfonline.com/loi/tnah14>

XXXI.—Descriptions of new African Cyprinodont fishes

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Published online: 08 Sep 2009.

To cite this article: G.A. Boulenger F.R.S. (1911) XXXI.—Descriptions of new African Cyprinodont fishes , *Annals and Magazine of Natural History: Series 8*, 8:44, 260-268, DOI: [10.1080/00222931108693023](https://doi.org/10.1080/00222931108693023)

To link to this article: <http://dx.doi.org/10.1080/00222931108693023>

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than back. Flanks pale reddish buff (yellowish salmon no. 1, 'Répertoire de Couleurs'), the general effect much paler and purer in colour than in *mullah*. Spines on flanks with white bases and pale reddish tips, no suggestion of the brownish tips such as occur in *mullah*. Sides of face and neck white, washed with pale brownish buff. Backs of hands and feet pure white. Ventral surface of body white. Tail similar to that of *A. mullah*, but lighter on the dorsal surface.

Skull smaller than in *A. mullah*; nasals and palatal foramina markedly shorter, cheek-teeth rather smaller.

Dimensions of the type (measured in the flesh):—

Head and body 105 mm.; tail 105; hind foot 17; ear 18.

Skull: greatest length 30; basilar length 23; condylo-incisive length 26.6; zygomatic breadth 14.4; interorbital constriction 5; breadth of brain-case (across squamosal region) 12.6; greatest length of nasals 11.5; length of palatal foramina 7; width across palate (inside *m*¹) 3; length of upper molar series 4.5.

Hab. Bulhar, Somaliland. Altitude, coast.

Type. Adult male. Original number 349. Collected on December 23rd, 1910, by Dr. R. E. Drake-Brockman and presented by him to the British Museum.

The exceedingly pale colour of the dorsal surface of this new form at once distinguishes it from the allied species *A. mullah*, while the cranial differences, noted above, necessitate the two forms being considered specifically distinct. It is interesting to note that this new species appears to occur only on the coast, whereas *A. mullah* is confined to the interior, the type locality being Harrar.

In addition to the type, Dr. Drake-Brockman collected six further specimens of this *Aconys* at Bulhar, all agreeing in the pale coloration of the dorsal surface. It gives me great pleasure to name this new species after Dr. Drake-Brockman, who has already done so much to enlighten zoological science on the mammalian fauna of Somaliland and Abyssinia.

XXXI.—*Descriptions of new African Cyprinodont Fishes.*

By G. A. BOULENGER, F.R.S.

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A REVISION I have recently made of the African Cyprinodonts has resulted in the establishment of several new species, some

of which are based on specimens which have been brought over alive for exhibition in aquariums, or which are of interest as destroyers of mosquito-larvæ; it is therefore desirable to publish descriptions of them in anticipation of the forthcoming third volume of the British Museum Catalogue of Fresh-water Fishes, in which all the known species will be described and most of them figured.

I seize this opportunity to point out that the scales of the Cyprinodont described by me as *Haplochilus tanganicus* are ctenoid; this character and others justify the establishment of a new genus, for which *Mohanga*, one of the native names of the fish, is proposed. *Mohanga tanganicana* further differs from all other African Cyprinodonts in having the conical unequal-sized teeth forming a band which is exposed when the mouth is closed, as in the Atherinid genus *Rhomboatractus*, and a larger anal fin with 28 to 30 rays.

Fundulus gardneri.

Depth or body 4 times in total length, length of head $3\frac{1}{2}$ to $3\frac{3}{4}$ times. Head flat above; snout short and broad, as long as eye; mouth directed upwards; lower jaw projecting; eye 4 times in length of head, twice in interorbital width; space between eye and lip about $\frac{1}{4}$ diameter of former. Dorsal 13, originating at equal distance from head and from base of caudal; longest (posterior) rays $\frac{2}{3}$ to once length of head. Anal 15-16, originating slightly in advance of dorsal. Pectoral $\frac{2}{3}$ length of head, just reaching base of ventral, which is small and midway between end of snout and base of caudal. Caudal rounded, with one of the upper and one of the lower rays produced (males). Caudal peduncle a little longer than deep. 28-31 scales in longitudinal series, 22-24 round body in front of ventrals; lateral line entirely absent, or indicated by a few pits. Olive above, white below; sides of head and body, chin, and fins with crimson spots; upper edge of dorsal and upper and lower edge of caudal white.

Total length 60 mm.

Head-waters of Cross River, Calabar. Three specimens from Okwoga, lat. 7° N., long. $7^{\circ} 45'$ E., were presented by Mr. R. D. Gardner.

Fundulus batesii.

Depth of body $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ times. Head flat above; snout short and broad, as long as eye; mouth directed upwards; lower jaw projecting; eye $3\frac{2}{3}$ times in length of head, $1\frac{1}{2}$ times in interorbital width.

Dorsal 14-15, originating midway between eye and root of caudal, longest (posterior) rays $\frac{2}{3}$ to $\frac{3}{4}$ length of head; space between eye and lip very narrow, the latter forming an angle fitting into a notch close to the former. Anal 14-15, exactly opposite to dorsal. Pectoral $\frac{2}{3}$ length of head, not quite reaching base of ventral, which is small and midway between end of snout and base of caudal. Caudal acuminate, bifurcate in the middle in males. Caudal peduncle $1\frac{2}{3}$ times as long as deep. 33-35 scales in longitudinal series, 24-26 round body in front of ventrals; lateral line indicated by a series of pits. Males olive-brown, profusely spotted with crimson; a crimson streak from eye to eye round the chin; dorsal and anal fins dark purplish, anal edged with lighter; pectoral paler, edged with crimson; caudal broadly edged with yellow above and beneath. Females yellowish olive, with small crimson spots.

Total length 66 mm.

South Cameroon (Congo Basin). Several specimens from the Ja and Bumba Rivers, from the collection of Mr. G. L. Bates.

Fundulus walkeri.

Depth of body $3\frac{2}{3}$ to 4 times in total length, length of head 3 to $3\frac{1}{2}$ times. Head flat above; snout short and broad, a little shorter than eye; mouth directed upwards, lower jaw projecting; eye $3\frac{1}{2}$ times in length of head, nearly twice in interorbital width; space between eye and lip very narrow, the latter forming an angle fitting into a notch close to the former. Dorsal 14, originating midway between occiput and root of caudal, posterior rays longest, $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal 15-16, originating slightly in advance of dorsal. Pectoral $\frac{2}{3}$ length of head, reaching base of ventral; latter small, equally distant from end of snout and from root of caudal. Caudal rounded. Caudal peduncle as long as deep. 28-30 scales in longitudinal series, 22-24 round body in front of ventrals; lateral line indicated by a series of pits. Uniform brownish (badly preserved specimens).

Total length 42 mm.

Gold Coast. Three specimens, obtained at the Bokitsa Mine by the late Mr. R. B. Walker.

Haplochilus ansorgii.

Depth of body 4 times in total length, length of head $3\frac{1}{2}$ to $3\frac{1}{2}$ times. Head flat above; snout broad, rounded, as long as eye; mouth directed upwards, lower jaw slightly pro-

jecting; eye $3\frac{2}{3}$ to 4 times in length of head, $\frac{1}{2}$ interorbital width; præorbital about $\frac{1}{4}$ diameter of eye. Dorsal 11, originating twice as far from occiput as from root of caudal, above middle of anal; longest rays about $\frac{3}{4}$ length of head (males). Anal 16. Pectoral $\frac{3}{4}$ length of head, reaching base of ventral; latter small, equally distant from end of snout and from root of caudal. Caudal acuminate, a little longer than head. Caudal peduncle as long as deep. 30-31 scales in longitudinal series, 18 round body in front of ventrals; lateral line indicated by a series of pits. Olive-brown above, yellowish beneath; sides with regular longitudinal series of carmine spots, following the series of scales and more or less confluent; lower lip blackish; fins grey, edged with black, dorsal and anal with round purplish-black spots.

Total length 70 mm.

Ogowe. Two specimens, obtained by Dr. W. J. Ansorge in the Masoma River, flowing into the Ogemwe at Umpokoya.

Haplochilus brucei.

Depth of body 4 to $4\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{2}$ times. Head flat above; snout broad, rounded, a little shorter than eye; mouth directed upwards, lower jaw slightly projecting; eye $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head, $1\frac{2}{3}$ to $1\frac{3}{4}$ times in interorbital width; præorbital very narrow. Dorsal 12-13, originating at equal distance from head and from root of caudal, above anterior third (fourth or fifth ray) of anal; longest ray $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal 14-15. Pectoral about $\frac{2}{3}$ length of head, not reaching ventral; latter equally distant from end of snout and from root of caudal. Caudal rounded, as long as head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. 30-34 scales in longitudinal series, 24-26 round body in front of ventrals; an interrupted series of very shallow lateral line pits. Pale yellowish olive, with or without small carmine dots on the sides of the head and body and on the dorsal and caudal fins.

Total length 32 mm.

Lower Niger. Several specimens from a pool at Udi, presented by Major G. E. Bruce.

Haplochilus lujæ.

Depth of body 4 to 5 times in total length, length of head $3\frac{1}{2}$ to 4 times. Head flat above; snout broad, rounded, a little shorter than eye; mouth directed upwards, lower jaw

projecting; eye $3\frac{1}{2}$ to $3\frac{3}{4}$ times in length of head, $1\frac{1}{2}$ to $1\frac{3}{4}$ times in interorbital width; præorbital very narrow. Dorsal 10-11, originating twice as far from centre or anterior border of eye as from root of caudal, above middle of anal; longest ray about as long as head in males, about $\frac{2}{3}$ length of head in females. Anal 14-15. Pectoral $\frac{3}{4}$ to $\frac{1}{2}$ length of head, not reaching ventral; latter small, equally distant from end of snout and from root of caudal. Caudal rounded, as long as head, with one of the upper and one of the lower rays more or less produced in males. Caudal peduncle $1\frac{2}{3}$ to 2 times as long as deep. 29-32 scales in longitudinal series, 20-22 round body in front of ventrals; lateral line represented by a more or less distinct series of pits. Males olive above, yellowish beneath, with numerous rather large carmine spots disposed irregularly; dorsal fin with small round purple spots; anal and caudal with large purple markings, which may form streaks in the direction of the rays. Females yellowish, the scales of the upper parts edged with olive-brown; small red or orange spots sometimes present on the sides; dorsal, anal, and caudal with small purplish-brown spots.

Total length 45 mm.

Numerous specimens were obtained by M. E. Lujá at Konduc, Kasai, Belgian Congo.

Haplochilus cabindaæ.

Depth of body equal to length of head, $3\frac{1}{2}$ times in total length. Head flat above; snout much shorter than eye; mouth directed upwards, lower jaw projecting; eye $2\frac{3}{4}$ times in length of head, a little less than interorbital width; præorbital $\frac{1}{3}$ diameter of eye. Dorsal 9, originating at equal distance from head and from root of caudal, or a little nearer latter, above middle of anal; longest rays $\frac{3}{4}$ length of head. Anal 15, longest rays $\frac{3}{4}$ length of head. Pectoral $\frac{3}{4}$ length of head, reaching beyond base of ventral; latter small, much nearer end of snout than root of caudal. Caudal truncate, as long as head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. 31 scales in longitudinal series, 16 round body in front of ventrals; no lateral line pits. Yellowish, finely speckled with blackish, the vertebral line and a broad lateral band olive-brown; fins uniform greyish.

Total length 38 mm.

Portuguese Congo. Two specimens were obtained at Cabinda by Dr. W. J. Ansorge.

Haplochilus exiguus.

Depth of body 4 times in total length, length of head $3\frac{1}{2}$ times. Head flat above; snout broad, rounded, a little shorter than eye; mouth directed upwards, lower jaw slightly projecting; eye $3\frac{1}{2}$ times in length of head, $\frac{2}{3}$ interorbital width; præorbital nearly $\frac{1}{3}$ diameter of eye. Dorsal 8, originating twice as far from eye as from root of caudal, above middle of anal; penultimate ray produced into a long filament (male). Anal 12. Pectoral $\frac{3}{4}$ length of head, barely reaching base of ventral; latter equally distant from end of snout and from root of caudal. Caudal rounded, slightly shorter than head. Caudal peduncle $1\frac{1}{2}$ times as long as deep. 28 scales in longitudinal series, 22 round body in front of ventrals. Yellowish, sides tinged with carmine; a carmine streak on each side of the head, through the eye and round the chin; another below the eye; gill-membranes, pectorals, and ventrals edged with carmine; dorsal and anal with a carmine longitudinal streak and some carmine spots; caudal bordered all round with carmine, with three bars of the same colour.

Total length 32 mm.

South Cameroon. A single specimen, from the Nyong River, received from Mr. G. L. Bates.

Haplochilus calliurus.

Depth of body $3\frac{1}{2}$ to $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{3}$ to $3\frac{2}{3}$ times. Head flat above; snout short and broad, nearly as long as eye; mouth directed upwards, lower jaw feebly projecting; eye $3\frac{2}{3}$ to 4 times in length of head, twice in interorbital width; præorbital not more than $\frac{1}{4}$ diameter of eye. Dorsal 9-10, originating twice as far from centre or anterior border of eye as from root of caudal, above middle of anal; longest ray $\frac{3}{4}$ to $\frac{2}{3}$ length of head in females, antepenultimate produced into a long filament in males. Anal 12-13, the antepenultimate ray produced into a very long filament in males. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ length of head, reaching base of ventrals in males, not in females; ventral equally distant from end of snout and from root of caudal, outer ray produced into a short filament in males. Caudal rounded-acuminate or decidedly pointed, one of the median rays produced in males. Caudal peduncle $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as deep. 29-30 scales in longitudinal series, 20-22 round body in front of ventrals; lateral line indicated by a series of pits. Olive or brownish above, yellowish white

beneath, with carmine spots, which are larger and lighter in the males, in which they may be confluent into longitudinal streaks; fins greyish, dorsal and caudal spotted with carmine; in males anal edged with carmine and white and lower border of caudal similarly marked.

Total length 50 mm.

Liberia. Several specimens, presented by Mr. J. Paul Arnold. I had first referred these fish to my *H. elegans*, and it is under that name that Mr. Arnold has published notes on it, together with an excellent coloured figure, in the 'Wochen-schrift für Aquarien- und Terrarienkunde,' vol. v. no. 23, 1908. *H. elegans* differs in having D. 7-8, A. 14-15.

Haplochilus striatus.

Depth of body 4 to $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$ times. Head flat above; snout short and broad, shorter than eye; mouth directed upwards, lower jaw projecting; eye $3\frac{1}{3}$ times in length of head, $1\frac{1}{2}$ times in inter-orbital width; præorbital about $\frac{1}{4}$ diameter of eye. Dorsal 9-10, originating twice as far from centre or anterior border of eye as from root of caudal, above middle of anal, acutely pointed behind, longest ray $\frac{3}{4}$ length of head (males). Anal 13, pointed like the dorsal. Pectoral $\frac{3}{4}$ to $\frac{5}{8}$ length of head, reaching base of ventral; latter small, equally distant from end of snout and from root of caudal. Caudal rounded, with one of the upper rays produced into a short filament. Caudal peduncle $1\frac{1}{3}$ times as long as deep. 30-31 scales in longitudinal series, 20-22 round body in front of ventrals; lateral line pits very indistinct or absent. Pale olive above, yellowish white beneath; carmine spots forming 3 or 4 regular longitudinal series on each side, separated by olive streaks; fins greyish, dorsal and anal edged with carmine and with a carmine median streak; caudal spotted with carmine and with a carmine and white streak above and below.

Total length 38 mm.

Ogowe. Four specimens from the Abanga River, between the first and second rapids, collected by Dr. W. J. Ansorge.

Haplochilus longiventralis.

Depth of body $4\frac{1}{3}$ to 5 times in total length, length of head 3 to $3\frac{1}{3}$ times. Head flat above; snout rounded, a little longer than eye; mouth directed upwards, lower jaw slightly projecting; eye $3\frac{1}{2}$ to $3\frac{2}{3}$ times in length of head, $1\frac{2}{3}$ to $1\frac{4}{5}$

times in interorbital width; præorbital barely $\frac{1}{4}$ diameter of eye. Dorsal 9, originating twice as far from head as from root of caudal, above posterior third of anal; longest rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal 15-16. Pectoral a little shorter than head, extending beyond base of ventral; latter $\frac{1}{2}$ as long as head in females, much produced and at least as long as pectoral in adult males, equally distant from end of snout and from root of caudal. Caudal rounded-acuminate, longer than head. Caudal peduncle as long as deep. 25-27 scales in longitudinal series, 20 round middle of body in front of ventrals; lateral line indicated by a series of pits. Pale brown above, yellowish beneath, with or without carmine dots; lower part of sides with numerous vertical or oblique dark brown or carmine narrow bars; some dark spots may be present on the dorsal fin and on the base of the caudal.

Total length 55 mm.

Southern Nigeria. Several specimens were obtained in swamps between Agwarba and Awka by Mr. R. D. Gardner. I have received others from the mouths of the Niger and Old Calabar through Mr. J. Paul Arnold, for whom I had identified them as *H. senegalensis*, Stdr. I now think they represent a distinct species, characterized by longer ventral fins.

Haplochilus grahami.

Depth of body 4 to $4\frac{1}{2}$ times in total length, length of head 3 to $3\frac{1}{2}$ times. Head flat above; snout broad, rounded, a little shorter than eye; mouth directed upwards; lower jaw projecting; eye 3 to $3\frac{1}{2}$ times in length of head, $1\frac{1}{2}$ times in interorbital width; præorbital barely $\frac{1}{4}$ diameter of eye. Dorsal 7, originating about twice as far from occiput as from root of caudal, above posterior fourth of anal, longest rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal 15-16, longest rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Pectoral $\frac{3}{4}$ length of head, extending beyond base of ventral; latter small, equally distant from end of snout and from root of caudal. Caudal pointed, longer than head. Caudal peduncle slightly longer than deep. 28-29 scales in longitudinal series, 20-22 round body in front of ventrals; lateral line indicated by a series of pits. Yellowish or pale brownish, with or without small crimson spots; 6 or 7 blackish vertical bars on the body, some reaching the back, some confined to the lower half of the body; a black blotch at the base of the caudal fin; fins greyish (yellow in life), caudal with small purplish-brown spots.

Total length 38 mm.

Lagos, in swamps. Several specimens were presented by Dr. W. M. Graham.

Haplochilus macrostigma.

Depth of body $4\frac{1}{3}$ times in total length, length of head $3\frac{1}{2}$ times. Head flat above; snout as long as eye; mouth directed upwards, lower jaw scarcely projecting; eye $3\frac{1}{2}$ times in length of head, $1\frac{2}{3}$ times in interorbital width; præ-orbital very narrow. Dorsal 9, originating twice as far from head as from root of caudal, above posterior third of anal; longest ray $\frac{1}{2}$ length of head. Anal 16. Pectoral $\frac{2}{3}$ length of head, reaching base of ventral; latter small, equally distant from end of snout and from root of caudal. Caudal rounded-acuminate, longer than head. Caudal peduncle as long as deep. 28 scales in longitudinal series, 18 round body in front of ventrals; lateral line indicated by a series of pits. Pale olive, with large crimson spots; fins greyish, dorsal, anal, and caudal with small crimson spots.

Total length 40 mm.

Portuguese Congo. A single specimen from Cabinda, received from Dr. W. J. Ansorge.

XXXII.—*A new Genus of Ruteline Coleoptera from the Indian Region.* By GILBERT J. ARROW.

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MICRANOMALA, gen. nov.

Body very small, elongate and depressed. Clypeus small, narrowed to the front, where it is strongly reflexed and emarginate, with prominent lateral angles. Clypeal suture strongly marked, carinate and nearly straight. Eyes very large, with the inner margin nearly straight dorsally and very oblique, so that the intervening space is nearly twice as wide behind as in front. Antennæ 9-jointed, long and slender. Prothorax moderately transverse, not much narrowed in front, completely but narrowly margined, with the base almost straight. No sternal process. Legs long; front tibiæ tridentate, the uppermost tooth minute. Tarsi and claws slender; front and middle tarsi with the longer claw cleft near the middle of its length. Elytra with membranous outer margins. ♂. Eyes much larger than in the female. Inner front claw strongly dilated.

This genus has most of the characters of *Anomala*, but is clearly separated from it by a combination of peculiar