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TAXONOMIC REVISION OF THE *AMPHILIUS URANOSCOPUS* GROUP (TELEOSTEI: SILURIFORMES) IN KENYA, WITH THE DESCRIPTION OF A NEW SPECIES FROM THE ATHI RIVER

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TAXONOMIC REVISION OF THE *AMPHILIUS URANOSCOPUS* GROUP (TELEOSTEI: SILURIFORMES) IN KENYA, WITH THE DESCRIPTION OF A NEW SPECIES FROM THE ATHI RIVER

Alfred W. Thomson[1] and Lawrence M. Page[1]

ABSTRACT

The taxonomy of the *Amphilius uranoscopus* group in Kenya is revised. ***Amphilius athiensis*** n. sp. is described from the Galana River basin, and *Amphilius grandis* and *Amphilius krefftii* are removed from synonymy with *A. uranoscopus* and redescribed. All three species are assigned to the *Amphilius uranoscopus* group, which is distinguished from other species of *Amphilius* by the absence of a crenellated epidermal fold at the base of the caudal fin, having 8+9 (i,7,8,i) principal caudal-fin rays, usually having 36 to 42 total vertebrae, and by having the leading pterygiophore of the dorsal fin intercepting the vertebral column at the first, second or third post-Weberian vertebra. Six species are recognized in the *A. uranoscopus* group (*A. athiensis* n. sp., *Amphilius chalei*, *Amphilius cryptobullatus*, *A. grandis*, *A. krefftii*, and *A. uranoscopus*). They are distinguished from each other by coloration, barbel length, caudal fin shape, body and caudal peduncle depth, number of vertebrae, and by the development of their bilateral bony swimbladder capsules.

Key Words: catfishes, Amphiliidae, Siluriformes, Africa, new species.

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INTRODUCTION

The catfish family Amphiliidae is widely distributed throughout sub-Saharan Africa and includes 12 genera and about 66 species (Ferraris 2007; Skelton 2007; Seegers 2008). Most amphiliid species are found in fast-flowing water of clear, rocky streams at high elevations or rapids of large lowland rivers (Berra 2001; Roberts 2003). Recent workers have recognized three subfamilies within Amphiliidae, with *Amphilius* and *Paramphilius* placed in the subfamily Amphiliinae (Diogo 2003, 2005). Twenty-five species are currently recognized in the genus *Amphilius*, with most occurring in the drainages of western Africa and the Congo River basin. A recent checklist of the fishes of Kenya recognized two species of *Amphilius* in Kenya, *A. jacksonii* in the Nile River basin and *A. uranoscopus* in the Ewaso Ngiro, Tana, Galana, and Pangani River basins (Seegers et al. 2003).

Species of *Amphilius* are adapted for fast flow and rocky habitats (Skelton 1986). Morphological adaptations for these habitats include expanded pectoral and pelvic fins with a thickened first ray, depressed body, dorsally directed eyes and reduced swimbladder (Skelton 1986; Walsh et al. 2000). The large pelvic fins form, in conjunction with the body, a feeble sucking disc that enables the fish to cling to rocks (Jackson 1961b). The epidermal microstructure of the anterior ray of the pectoral fin, as observed by a scanning electron microscope (Bell-Cross & Jubb 1973), is similar to the epidermal microstructure of the adhesive organs in Asian sisorid catfishes (Singh & Agarwal 1991; Das & Nag 2004, 2005).

Little information is available on the biology of *Amphilius*. Skelton (2001) stated that South African species breed during the summer. Marriott et al. (1997) studied the reproductive biology of *A. natalensis* in South Africa and concluded that the species had a long breeding period extending from August to February. They observed that breeding coincided with the rainy season and postulated that spawning was initiated in response to increased water flow rate or changes in water quality following periods of rainfall (Marriott et al. 1997). Walsh et al. (2000) were not able to determine the breeding season of *A. jacksonii*, but suggested that it may have two breeding periods per year. In Kenya, Ngugi et al. (2009) studied the biology of *Amphilius* in the Thego River, a tributary of the Tana River, and found it to have a protracted spawning season with gonad weights significantly higher in February, May, and September than in other months.

The diet of *Amphilius* species has been reported to consist predominantly of benthic aquatic insects (Marriott et al. 1997; Skelton 2001; Walsh et al. 2000). Marriott et al. (1997) conducted a detailed stomach analysis of *A. natalensis,* and found the diet to consist mostly of larval chironomids and ephemeropterans. Additionally, they found that small individuals fed predominantly on chironomid larvae, while in larger individuals, chironomid and ephemeropteran larvae contributed almost equally in volume. Walsh et al. (2000) analyzed the stomach contents of 118 specimens of *A. jacksonii*, and similarly found the diet of this species to consist mainly of larval Diptera, Ephemeroptera and Trichoptera.

Systematic History

Günther (1864) described *Amphilius* as a section of the genus *Pimelodus* for a new species he named *Pimelodus platychir* from Sierra Leone, western Africa. Soon thereafter he recognized *Amphilius* as a genus (Günther 1865). Pfeffer (1889), apparently unaware of Günther's (1865) description, created the genus *Anoplopterus* for a new species, *Anoplopterus uranoscopus,* from the Wami River basin in Tanzania. Nine years later, Vaillant (1897) created the genus *Chimarrhoglanis* for a new species, which he described as *C. leroyi* from the nearby Ruvu River basin, Tanzania. Boulenger (1898) synonymized *C. leroyi* with *Pimelodus platychir*, but overlooked Günther's description of the genus *Amphilius* and synonymized *Chimarrhoglanis* with *Anoplopterus*. Boulenger (1898) also recognized Pfeffer's *A. uranoscopus* and suggested that the types of *A. platychir* did not come from Sierra Leone.

Poche (1902a) and Günther (1902) refuted Boulenger's (1898) suggestion that the types of *A. platychir* were not from Sierra Leone, and Poche (1902b), recognizing *Amphilius* as the correct name for the genus, synonymized *Anoplopterus* and *Chimarrhoglanis* with *Amphilius*. Despite Poche and Günther's assertions, Boulenger continued to question the type locality of Sierra Leone for *A. platychir* and recognized *A. platychir* as a species in eastern Africa (Boulenger 1902, 1905a, 1907a, 1907b).

Boulenger (1905a) described *Amphilius grandis* from the Tana River basin in Kenya. He distinguished this species from *A. uranoscopus* by its longer head (length four times in total length vs. five times in total length) and shorter barbels (maxillary barbel not reaching posterior border of head vs. extending beyond posterior border of head). He distinguished *A. grandis* from *A. platychir* by its longer head (length 4 times in total length vs. 4 to 4 1/2 times in total length), longer snout (snout length 1 2/3 interocular width vs. 1 1/3 to 1 1/2 interocular width), and a shorter caudal peduncle (not longer than deep vs. longer than deep).

In 1911, Boulenger published volume two of his "Catalogue of Freshwater Fishes of Africa," and recognized four species in the drainages of east-central Africa: *A. uranoscopus*, *A. platychir*, *A. grandis*, and *A. krefftii*, a new species that he described from the Sigi River, Tanzania. *Amphilius krefftii*, like *A. grandis*, was distinguished from the other species of *Amphilius* by relative proportions of its head, barbel, and caudal-peduncle lengths. Soon thereafter, he described a fifth species, *A. oxyrhinus*, from the Eusso Mara River, a tributary of the Ewaso Ngiro River, in Kenya (Boulenger, 1912). He only distinguished this species from *A. grandis*, the only other species of *Amphilius* he recorded from the Ewaso Ngiro River.

Since Boulenger's (1911) description of *A. krefftii*, most workers continued to recognize all of the species that Boulenger recognized (Copley 1941, Harry 1953, Whitehead 1958), but Bailey (1969:192) questioned the validity of *A. krefftii* and stated that it is "very probably a synonym of *A. grandis*." Meanwhile, *A. grandis* was reported from throughout eastern and southern Africa (Van der Horst 1931; Poll 1952; Crass 1960 1964; Jubb 1961).

Amphilius platychir was also reported from eastern and southern Africa (Ricardo 1939a, 1939b; Jackson 1959, 1961a; Maar 1960; Jubb 1963; Bell-Cross 1972). Bell-Cross & Jubb (1973) referred records of *A. grandis* from eastern and southern Africa to *A. platychir*, and *A. platychir* became accepted as being widespread throughout eastern and southern Africa.

Skelton (1984) revised the genus *Amphilius* from eastern and southern Africa and identified two groups within *Amphilius*. One group is primarily west African, has a crenellated epidermal fold at the base of the caudal fin and 6 + 7 principal caudal-fin rays. The second group is primarily distributed in eastern and southern Africa, lacks the crenellated epidermal fold and usually has 8 + 9 principal caudal-fin rays. *Amphilius platychir* was identified as a member of the first group, and all records of the species from eastern and southern Africa were determined to be based on a single widespread species, *A. uranoscopus*. Skelton (1984) considered *C. leroyi*, *A. grandis*, *A. krefftii,* and *A. oxyrhinus* to all be synonyms of *A. uranoscopus*. Three other taxa were also synonymized with *A. uranoscopus*: *Amphilius hargeri* from Mlangi, British Central Africa (Malawi), *Amphilius brevidorsalis* from the Rivière Revue (Mozambique), and *Amphilius platychir cubangoensis* from Angola.

Skelton (1984) distinguished *Amphilius uranoscopus* from the other eastern species of *Amphilius* by two characters that appear to be derived within *Amphilius*, its relatively long body (usually 36–40 total vertebrae) and anteriorly placed dorsal fin (leading dorsal-fin pterygiophore intercepts the vertebral column at the first, second or third post-Weberian vertebra). Since Skelton's revision, two additional eastern species of *Amphilius* with these characters have been named: *Amphilius cryptobullatus* from the upper Congo River basin (Skelton 1986); and *A. chalei* from the Rufiji River basin in Tanzania (Seegers 2008). *Amphilius cryptobullatus* was distinguished from *A. uranoscopus* by the development

and extremely large size of its bilateral bony swimbladder capsules, and *A. chalei* by its extremely slender body and caudal peduncle (Skelton 1986, Seegers 2008).

In this study, we address the identification of *A. uranoscopus* in Kenya by examining all available museum specimens from Kenya and recently collected material from the Sigi, Pangani, and Wami River basins in Tanzania. We conclude that *A. uranoscopus* does not occur in Kenya, and that references to that species in Kenya are based on three different species. Two of these species, *A. grandis* and *A. krefftii*, have been considered synonyms of *A. uranoscopus,* while the third is a new species described in this paper. These species are part of the *Amphilius uranoscopus* group as diagnosed below.

MATERIALS AND METHODS

Measurements were made point-to-point with digital calipers, and data were recorded to tenths of a millimeter. Subunits of the head are presented as proportions of head length (HL). Head length and measurements of other body parts are given as proportions of standard length (SL). Use of the terms origin and insertion to designate, respectively, the most anterior and posterior points on the bases of all fins follows Cailliet et al. (1986). Counts and measurements were made on the left side of a specimen when possible and follow Skelton (1981, 1984, 1986) with the additional measurements of body depth at anus, prepectoral-fin length, preanal-fin length, dorsal-fin base length, adipose-fin base length, pelvic- and pectoral-fin lengths, prepelvic-fin length, postpelvic-fin length, and preanus length. Only specimens 40.0 mm SL or larger were measured, but counts were made on all specimens. For fin-ray counts, numbers of unbranched soft rays are indicated by lower case Roman numerals, and branched soft rays by Arabic numerals. The number of anterior unbranched rays in the anal fin is difficult to determine, and the counts were checked with radiographs whenever possible. Amphiliids typically have a small spinelet in front of the first unbranched dorsal-fin ray. The spinelet is not included in the counts. Branchiostegal ray counts only include rays that articulate with the ceratohyal (anterohyal). Vertebrae were counted by means of radiographs; counts exclude the five Weberian vertebrae. Abdominal vertebrae include all vertebrae in front of or exactly parallel to the anterior anal pterygiophore. Caudal vertebrae include all vertebrae posterior to the abdominal vertebrae, with the ural centrum counted as one vertebra. Vertebral counts for *A. cryptobullatus* are from Skelton (1986). The first dorsal pterygiophore intercept count is the number of vertebrae up to and including the vertebra opposite, or anterior to, the spine of the leading dorsal pterygiophore.

Material examined is given under each species account and is listed by drainage followed by catalog number, country, locality, geographic coordinates and, in parentheses, the number of specimens and the size range in mm SL. Materials examined in this study are deposited in the following institutions: the Natural History Museum, London (**BMNH**), the California Academy of Sciences, San Francisco, California (**CAS**), the Cornell University, Vertebrate Collections, Ithaca, New York (**CU**), the Field Museum of Natural History, Chicago, Illinois (**FMNH**), the Harvard Museum of Comparative Zoology, Cambridge, Massachusetts (**MCZ**), the Royal Museum of Central Africa, Tervuren, Belgium (**MRAC**), the South African Institute for Aquatic Biodiversity, Grahamstown, South Africa (**SAIAB**), the Florida Museum of Natural History, Gainesville, Florida (**UF**), and the Universität Hamburg, Biozentrum Grindel und Zoologisches Museum, Ichthyology, Hamburg, Germany (**ZMH**).

Synonymies include all references to the species in east-central Africa. The first page of the reference to the species and all figures are listed. If the species is also listed in a key on a separate page from the account, that page is also listed. The type of information in the reference is given followed by the locality for the species as given in the account. Additionally, any specimens that the account is known to be based on are listed. If the account is only based in part on the species, only the information that is applicable to that species is listed. Accounts of species outside east-central

Africa that give only a general distribution in east-central Africa are excluded.

TAXONOMIC DESCRIPTIONS

Amphilius uranoscopus Group

Species of the *Amphilius uranoscopus* group, *A. athiensis*, n. sp., *A. krefftii, A. grandis*. *A. chalei, A. cryptobullatus,* and *A. uranoscopus,* are distinguished from all other species of *Amphilius* by the following combination of characters: absence (vs. presence) of a crenellated epidermal fold at the base of the caudal fin, 8+9 (i,7,8,i) principal caudal-fin rays (vs. 6+7 or 7+8), usually 36–42 (vs. 32–35) total vertebrae, leading pterygiophore of the dorsal fin intercepts the vertebral column at the first, second or third post-Weberian vertebra (vs. at the fourth, fifth or sixth post-Weberian vertebra).

Species of the *Amphilius uranoscopus* group differ from all other species of *Amphilius* except *A. natalensis*, *A. lampei, A. kivuensis, A. laticaudatus,* and *A. zairensis* by the absence (vs. presence) of the crenulated epidermal fold and by having 8+9 (i,7,8,i) principal caudal-fin rays (vs. 6+7 or 7+8). Species of the *A. uranoscopus* group differ from *A. natalensis*, *A. lampei,* and *A. kivuensis* by having the leading pterygiophore of the dorsal fin intercepting the vertebral column after the third post-Weberian vertebra (vs. at the fourth, fifth or sixth post-Weberian vertebra). Species of the *A. uranoscopus* group differ from *A. laticaudatus* and *A. zairensis* by having relatively longer bodies (usually 36–42 total vertebrae vs. 32–35). Following are diagnoses and descriptions of the three species of the *A. uranoscopus* group in Kenya: *A. athiensis*, *A. krefftii,* and *A. grandis*. The three species of the *A. uranoscopus* group found elsewhere are *A. chalei, A. cryptobullatus,* and *A. uranoscopus* (Fig. 1).

Figure 1. Lateral views of A: *Amphilius uranoscopus*, UF 170723, 96.2 mm SL, Wami River basin, Tanzania; B: *Amphilius cryptobullatus*, CU 91072, 88.5 mm SL, Congo River basin, Zambia; C: *Amphilius chalei*, UF 170728, 123.9 mm SL, Rufiji River basin, Tanzania. Scale bars equal 1 cm. Color version available online at http://www.flmnh.ufl.edu/bulletin/vol49no2/figure1.pdf.

Table 1. Diagnostic characters of species of the *Amphilius uranoscopus* group. Modes in parentheses.

Character	*A. athiensis*	*A. grandis*	*A. krefftii*	*A. uranoscopus*	*A. chalei*	*A. cryptobullatus*
Total vertebrae	38–40 (38)	37–40 (38)	36–38 (36)	38–39 (38)	38–39 (38)	35–38 (36)
Caudal-fin shape	Forked	Forked	Emarginate	Forked	Forked	Emarginate
Body coloration	Brown and finely spotted	Uniformly light brown or brown with large dark spots or blotches	Brown/yellow, black; spots/ blotches rarely present	Grey with diffuse black stripe along side	Usually dark blotches along side but may be uniformly brown	Mottled black and light brown/cream
Spots on fins	Present	Absent	Absent	Absent	Absent	Absent
Distinct pale patches at origin and insertion of dorsal fin	Absent	Absent	Present	Present	Usually present	Present
Inner mandibular barbel length/HL	33.3–42.0	20.2–33.6	19.8–46.9	24.4–47.7	17.6–41.2	25.3–37.67
Body depth at anus/SL	11.1–15.3	11.0–14.4	11.1–16.5	12.7–16.3	8.9–10.8	12.5–14.4
Caudal-peduncle length/ SL	14.6–18.3	14.6–19.0	14.5–22.7	15.1–17.9	19.0–21.9	15.8–19.8
Caudal-peduncle depth/ SL	10.1–12.6	9.0–12.6	10.2–13.5	10.9–14.3	7.1–9.7	9.9–11.3

Amphilius athiensis **new species**
(Fig. 2; Tables 1–2)

Amphilius grandis (non Boulenger) Boulenger 1916: 306 (in part), [Nairobi] [BMNH 1910.10.31.31]; Copley 1941: 15 (in part), [Galana River basin] [BMNH 1937.12.11.16-18, BMNH 1969.3.24.61-62]; Copley 1958: 98 (in part), [Galana River basin] [BMNH 1937.12.11.16-18, BMNH 1969.3.24.61-62].

Amphilius uranoscopus Skelton 1994: 126 (in part) [Galana River basin]; Seegers 1996: 255, fig. 16 (in part), Athi River; Seegers et al. 2003: 37 (in part), Athi River system.

Holotype.—BMNH 1910.10.31.31, Nairobi, Kenya, ca. 1°16'28"S, 36°48'47"E (1: 150.0).

Paratypes.—BMNH 1905.12.11.2, Kenya, Nairobi River, Kikaya, ca. 1°10'33"S, 36°56'24"E (1: 160.3); BMNH 1909.11.15.21-23, Nairobi River, elev. 2500 ft., ca. 1°10'33"S, 36°56'24"E (2: 89.1–119.5); BMNH 1928.11.10.11-12, Nairobi River, elev. 6500 ft., ca. 1°10'33"S, 36°56'24"E (3: 59.6–140.5); BMNH 1928.11.10.13-18, Kenya, Riara River, elev. 5700 ft., ca. 1°8'49"S, 36°57'47"E (2: 37.6–87.2); BMNH 1937.12.11.16-18, Kenya, Mbakasi River, ca. 1°18'10"S, 36°55'10"E (3: 58.1–110.3); BMNH 1937.6.4.43, Kenya, Athi River, Fourteen Falls, ca. 1°7'40"S, 37°21'25"E (1: 44.0); BMNH 1969.3.24.61-62, Kenya, Ngong River, tributary of Nairobi River, ca. 1°18'25"S, 36°53'23"E (2: 123.6–146.9); BMNH 1987.3.23.4, Kenya, Athi River, SE of Nairobi, ca. 1°26'32"S, 36°59'25"E (1: 36.0); CAS SU 24169, ex. BMNH 1928.11.10.13-18,

Figure 2. Lateral, dorsal and ventral views of the holotype of *Amphilius athiensis*, BMNH 1910.10.31.31, 150.0 mm SL, Galana River basin, Kenya. Scale bar equals 1 cm. Color version available online at http://www.flmnh.ufl.edu/bulletin/vol49no2/figure2.pdf.

(1: 87.1); MCZ 32518, ex. BMNH 1928.11.10.13-18, (1: 96.5); MRAC A7-25-P-1-2, ex. BMNH 1928.11.10.13-18, (2: 78.0–82.0); SAIAB 87475, ex. BMNH 1909.11.15.21-23, (1: 106.0); UF 167873, ex. BMNH 1928.11.10.13-18, (2: 79.4–92.6); USNM 72922, Kenya, Nairobi R., near Nairobi, ca. 1°10'33"S, 36°56'24"E (2: 113.4–159.4).

Diagnosis.—Diagnostic characters are summarized in Table 1. *Amphilius athiensis* is distinguished from all other species of the *A. uranoscopus* group by its distinctive coloration consisting of many small dark spots on its head, body, and fins (vs. head, body, and fins not finely spotted). *Amphilius athiensis* also differs from *A. grandis* by having longer inner mandibular barbels (33.3–42.0% HL vs. 20.2–33.6% HL), from *A. chalei*, *A. cryptobullatus*, *A. krefftii,* and *A. uranoscopus* by the absence of distinct pale patches at the origin and insertion of the dorsal fin, and from *A. cryptobullatus* and *A. krefftii* by its forked (vs. emarginate) caudal fin. It also differs from *A. krefftii* by its more elongate body with 38–40 total vertebrae (vs. short body with

Table 2. Morphometric data for *Amphilius athiensis* n. sp. Range and mean include the holotype.

	Holotype	Range (n=21)	Mean±SD
SL	150.0	58.1–160.3	
%SL			
Head length	28.9	25.4–30.6	26.8±1.2
Head width	22.7	20.5–26.2	22.0±1.3
Head height	11.3	11.3–14.9	12.6±0.9
Body depth	13.0	12.4–17.3	14.7±1.4
Body depth at anus	11.8	11.1–15.3	13.3±1.1
Predorsal-fin length	37.9	35.2–39.6	37.4±1.3
Prepectoral-fin length	24.1	19.5–25.6	22.2±1.7
Preanal-fin length	79.6	72.3–79.6	75.5±1.9
Dorsal-fin base length	9.2	8.0–11.7	9.4±0.8
Adipose-fin base length	18.7	18.5–23.5	20.3±1.6
Anal-fin base length	8.7	8.6–16.6	10.4±1.8
Pelvic-fin length	16.1	16.0–19.7	17.7±1.2
Pectoral-fin length	18.7	17.4–22.0	19.5±1.3
Anal-fin length	15.7	14.5–19.2	16.9±1.4
Caudal-peduncle length	15.8	14.6–18.3	16.5±1.1
Caudal-peduncle depth	10.1	10.1–12.6	11.0±0.7
Prepelvic-fin length	56.1	50.9–58.3	54.2±1.9
Postpelvic-fin length	49.9	42.8–51.2	47.2±2.3
Preanus length	66.3	58.1–66.3	62.1±2.0
%HL			
Snout length	50.1	46.6–55.2	50.7±1.8
Interorbital distance	24.9	23.5–32.3	27.2±2.2
Maxillary barbel length	69.2	69.2–88.0	75.9±4.9
Inner mandibular barbel length	35.1	33.3–42.0	36.9±2.5
Outer mandibular barbel length	57.4	46.7–69.0	58.5±6.0
Eye diameter	8.4	8.4–14.6	10.8±1.8

usually 36 total vertebrae). *Amphilius athiensis* also differs from *A. chalei* by having a deeper body (body depth at anus 11.1–15.3% SL vs. 8.9–10.8% SL), a deeper caudal peduncle (caudal peduncle depth 10.1–12.6% SL vs. 7.1–9.7% SL), and shorter caudal peduncle (caudal peduncle length 14.6–18.3% SL vs. 19.0–21.9% SL). It also differs from *A. cryptobullatus* by having normally developed bilateral bony swimbladder capsules (vs. bilateral bony swimbladder capsules extremely large).

Description.—Morphometric data as in Table 2. Body elongate, ventral profile flattened ventrally to anal-fin base, then tapered dorsally to end of caudal peduncle. Dorsal profile rising gently from tip of snout to origin of dorsal fin, then nearly horizontal to end of caudal peduncle. Greatest body depth at dorsal-fin origin. Caudal peduncle laterally compressed, without crenellated epidermal fold. Anus and urogenital openings located just posterior to base of pelvic fin, closer to insertion of pelvic fin than to origin of anal fin. Skin smooth. Lateral line complete, extending from dorsal edge of opercular cavity to base of caudal fin. Total vertebrae 38 (8), 39* (3), or 40 (2). Abdominal vertebrae 21 (4), 22 (4), or 23* (4). Caudal vertebrae 15* (2), 16 (5), or 17 (5). First dorsal pterygiophore intercept count 1* (12) or 2 (1).

Head and anterior part of body depressed and broad. Head wedge-shaped in lateral view. Snout broad, moderately pointed when viewed from above. Head becoming wider from tip of snout to pectoral-fin base. Branchiostegal membranes moderately joined at isthmus forming a *V*-shaped or deeply concave connection.

Mouth broad, gently curved, subterminal. Lips moderately fleshy, papillate. Rictal lobe large and papillate. Anterior portion of premaxillary tooth band exposed with mouth closed. Premaxillary tooth patches joined, forming *U*-shaped band, with short conical teeth. Dentary teeth short and conical, tooth patches forming *U*-shaped band, separated medially.

Three pairs of simple, tapered circumoral barbels. Maxillary barbel large, fleshy and flattened with pointed tip; barbel extending posterolaterally from corner of mouth to just short of pectoral-fin base. Outer mandibular barbel thin with pointed tip, origin at posterior corner of lower jaw, extending to edge of branchiostegal membrane. Inner mandibular barbel originates anterolaterally of inner mandibular barbel, extending to edge of branchiostegal membrane. Branchiostegal membrane with 6 (1) or 7* (21) rays. Gill rakers on first epibranchial 3* (18) or 4 (3); rakers on first ceratobranchial 6* (8) or 7 (13); total gill rakers on first arch 9* (7), 10 (12), or 11 (2).

Eyes small, positioned dorsolaterally approximately midway between tip of snout and posterior margin of operculum. Horizontal diameter of eye slightly wider than vertical diameter. Eye without free orbit; covered with skin confluent with dorsal surface of head. Anterior and posterior nares with prominent tubular rims; nares separate but relatively close to each other. Posterior nare located about midway between eye and tip of snout.

Dorsal-fin origin at point over tip of pectoral fin. Dorsal fin with i,6 (22) rays, and fin margin straight. Pectoral fin with i,9* (12) or i,10 (8) rays with first ray unbranched and greatly thickened. Pectoral fin with 4 or 5 innermost rays progressively shorter making posterior fin margin rounded. Pelvic fin inserted posteriorly to dorsal-fin base. Pelvic fin with i,5 (22) rays with first ray unbranched and greatly thickened. Pelvic fin with straight posterior margin.

Adipose-fin base longer than anal-fin base; origin anterior to origin of anal-fin base; fin extending past anal-fin insertion. Margin strongly convex with sharply rounded edge, not deeply incised posteriorly. Caudal fin deeply emarginate or forked with tips of lobes rounded, with i,5,6,i (1), i,6,7,i (1), i,7,7,i (2), i,7,8,i* (16), or i,8,8,i (1) principal rays. Anal fin with short base; origin posterior to origin of adipose-fin base; fin with iii,5 (7), iii,6* (13), or iii,7 (2) rays. Anal fin margin almost straight.

Coloration.—Dorsal and lateral surfaces of head and body brown with many small black spots. Ventral region of head dark yellow or brown. Ventral region of body brown to dark yellow. Light dorsal saddles absent. Dorsal, adipose, caudal, and anal fins brown. Pectoral and

pelvic fins positioned horizontally with upper surfaces brown with light distal edge and lower surfaces light yellow. Small black spots on all fins. Maxillary and mandibular barbels brown. Caudal fin with dark crescent-shaped band at base.

Distribution.—Known only from the Athi River system, Galana River basin, Kenya (Fig. 3).

Etymology.—*Athiensis* refers to the Athi River system, where the species appears to be endemic; used as a noun in apposition.

Amphilius grandis Boulenger 1905

(Fig, 4; Tables 1, 3)

Amphilius grandis Boulenger 1905a: 63, Pl. 7 (fig. 3), Original description, Type locality: Chania R. of Tetse, Tana system, Kenya, elev. 7000 ft., [BMNH 1904.12.23.50-52]; Boulenger 1905b: 48, Headwaters of the Tana system; Boulenger 1911: 353, 355, fig. 275 (in part), in key, description, East Africa (Tana to Athi River systems) [Tana River basin only]; Boulenger 1912: 675, diagnosis from *Amphilius oxyrhinus*, [Ewaso Ngiro River basin], [BMNH 1912.3.22.119]; Boulenger 1916: 306, Nairobi, Ewaso Ngiro, below falls; Pellegrin 1936: 57, similarity to *Amphilius platychir* var. *cubangoensis*; Copley 1941: 15 [Ewaso Ngiro and Tana River basins], Harry 1953: 189 (in part), synonymy; Copley 1958: 98, [Tana River basin], [BMNH 1937.6.4.36-42], Whitehead 1958: 198 (in part), [Kenya], Bailey 1969: 192 (in part), eastern rivers of Kenya; Skelton 1984: 45, in synonymy of *A. uranoscopus*.

Amphilius oxyrhinus Boulenger 1912: 675, Pl. 80, Original description, Type locality: Eusso Mara, a swift mountain stream, Kenya [Ewaso Ngiro River basin], [BMNH 1912.22.120]; Boulenger 1916: 306, [Ewaso Ngiro River basin]; Skelton 1984: 45, in synonymy of *A. uranoscopus*.

Amphilius platychir (non Günther) Whitehead 1958: 198 (in part), [Ewaso Ngiro River basin].

Amphilius uranoscopus (non Pfeffer) Skelton 1994: 126, (in part) [Tana River basin]; Seegers et al. 2003: 37 (in part) [Ewaso Ngiro and Tana River basins].

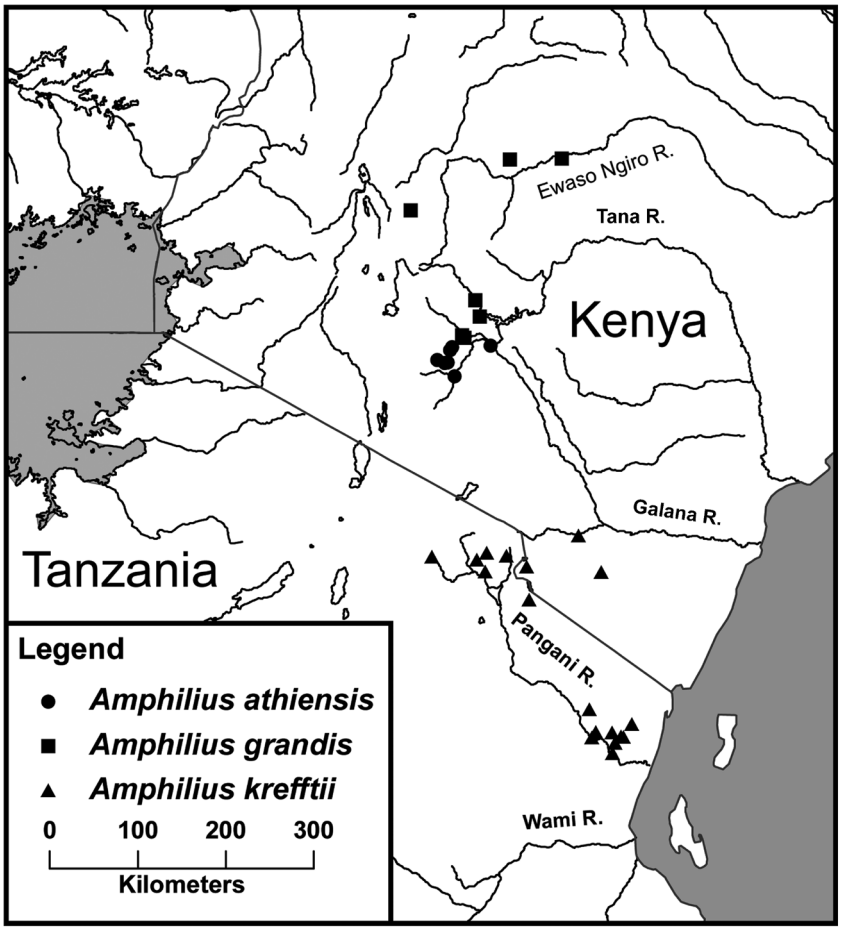

Figure 3. Known distribution of *Amphilius athiensis*, *Amphilius grandis* and *Amphilius krefftii*.

Material Examined.—**Ewaso Ngiro River basin:** BMNH 1912.22.120, Kenya, Eusso Mara, a swift mountain stream, tributary of Ewaso Ngiro, ca. 0º46'13"N, 37º 33'27"E (1: 166.0, holotype of *A. oxyrhinus*); BMNH 1908.9.17.13-18, Kenya, Nyiro-Narok; Niro-Narok system, elev. 4000–5000 ft., ca. 0º15'18"N, 36º 32'21"E (5: 93.4–181.4); BMNH 1912.3.22.119, Kenya, Eusso Nyiro, below falls, ca. 0º47'02"N, 38º 05'04"E (1: 113.6), SAIAB 87474, ex. BMNH 1908.9.17.13-18, (1: 135.3); UF 177478, ex. BMNH 1908.9.17.13-18, (1: 120.2). **Tana River basin:** BMNH 1904.12.23.50-52, Kenya, Chania River of Tetse, Kenya, elev. 7000 ft., ca. 1º01'26"N, 37º04'07"E (2: 136.1–160.0, Syntypes); BMNH 1937.6.4.36-42, Kenya, Thika River, Ndula Falls, ca. 1º02'58"N,

Figure 4. Lateral, dorsal and ventral views of *Amphilius grandis*, UF 177478, 120.2 mm SL, Ewaso Ngiro River basin, Kenya. Scale bar equals 1 cm. Color version available online at http://www.flmnh.ufl.edu/bulletin/vol49no2/figure4.pdf.

37º05'34"E (12: 32.1–65.9); BMNH 1965.12.7.125, Kenya, Rogati River, Sagana, ca. 0º39'53"N, 37º12'07'E (1: 42.9); BMNH 1965.12.7.126-128, same locality (3: 60.9–89.7); BMNH 1965.12.7.129, same locality (1: 156.8); BMNH 1965.12.7.130-131, same locality (2: 74.9–98.7); BMNH 1965.12.7.132, same locality (1: 51.8); BMNH 1966.6.28.2-3, same locality (2: 65.9–102.6); BMNH 1966.8.25.18, same locality (1: 34.8); MRAC 74-48-P-12-13, Kenya, upper Tana, side creek, ca. 00°50'S, 37°15'E (2: 52.6–60.3). **Unknown river basin:** CAS SU 66020, Kenya, East Macania [Makania] River (1: 43.5).

Diagnosis.—Diagnostic characters are summarized in Table 1. *Amphilius grandis* is distinguished from *A. chalei*, *A. cryptobullatus*, *A. krefftii,* and *A. uranoscopus* by the absence of distinct pale patches at the origin and insertion of the dorsal fin. It differs from *A. athiensis* by the absence of small dark spots on head, body, and fins (vs. head, body, and fins finely spotted), and by having shorter inner mandibular barbels (20.2–33.6% HL vs. 33.3–42.0% HL). It also differs from *A. cryptobullatus* and *A. krefftii* by its forked (vs. emarginate) caudal fin, and from *A. krefftii* by its more elongate body with 37–40 total vertebrae (vs. usually 36 total vertebrae). It also differs from *A. uranoscopus* by its body coloration, uniformly brown or brown with large dark spots or blotches (vs. body grey with diffuse black stripe along side). *Amphilius grandis* also differs from *A. chalei* by having a deeper body (body depth at anus 11.0–14.4 % SL vs. 8.9–10.8% SL) and a shorter caudal peduncle (caudal peduncle length 14.6–19.0% SL vs. 19.0–21.9% SL), and it also differs from *A. cryptobullatus* by having normally developed bilateral bony swimbladder capsules (vs. bilateral bony swimbladder capsules extremely large).

Description.—Morphometric data as in Table 3. Body elongate, ventral profile flattened ventrally to anal-fin base, then tapered dorsally to end of caudal peduncle. Dorsal profile rising gently from tip of snout to origin of dorsal fin, then nearly horizontal to end of caudal peduncle. Greatest body depth at dorsal-fin origin. Caudal peduncle laterally compressed, without crenellated epidermal fold. Anus and urogenital openings located at posteriormost extent of pelvic fin, closer to insertion of pelvic fin than to origin of anal fin. Skin smooth. Lateral line complete, extending from dorsal edge of opercular cavity to base of caudal fin. Total vertebrae 37 (8), 38 (15), 39* (11), or 40 (1). Abdominal vertebrae 20 (1), 21 (10) 22* (16), or 23 (5). Caudal vertebrae 15 (4), 16 (14), 17* (12), or 18 (2). First dorsal pterygiophore intercept count 1 (22) or 2* (13).

Head and anterior part of body depressed and broad. Head wedge-shaped in lateral view. Snout broad, blunt when viewed from above. Head becoming wider from tip of snout to pectoral-fin base. Branchiostegal membranes moderately joined at isthmus forming a *V*-shaped connection.

Mouth broad, gently curved, subterminal. Lips moderately fleshy, papillate. Rictal lobe large and papillate. Anterior portion of premaxillary tooth band exposed with mouth closed. Premaxillary tooth patches joined, forming *U*-shaped band, with short conical teeth. Dentary teeth short and conical, tooth patches forming *U*-shaped band, separated medially.

Three pairs of simple, tapered circumoral barbels. Maxillary barbel large, fleshy and flattened with pointed tip; barbel extending posterolaterally from corner of mouth to just short of pectoral-fin base. Outer mandibular barbel thin with pointed tip, origin at posterior corner of lower jaw, extending to origin of pectoral-fin. Inner mandibular barbel originates anterolaterally of inner mandibular barbel, extending to edge of branchiostegal membrane. Branchiostegal membrane with 7* (15), 8 (19), or 9 (2) rays. Gill rakers on first epibranchial 2 (7) or 3* (29); rakers on first ceratobranchial 4 (2), 5(6), 6 (16), 7 (10), or 8 (1); total gill rakers on first arch 6 (1), 7* (3), 8 (5), 9 (18), 10 (7), or 11 (1).

Eye small, positioned dorsolaterally approximately midway between tip of snout and posterior margin of operculum. Horizontal diameter of eye slightly wider than vertical diameter. Eye without free orbit; covered with skin confluent with dorsal surface of head. Anterior and posterior nares with prominent tubular rims; nares separate but relatively close to

each other. Posterior nare located about midway between eye and tip of snout.

Dorsal-fin origin at point over tip of pectoral fin. Dorsal fin with i,6* (35) or i,7 (1) rays, and fin margin straight. Pectoral fin with i,9 (3), i,10* (30), or i,11 (3) rays with first ray unbranched and greatly thickened. Pectoral fin with 4 or 5 innermost rays progressively shorter making posterior fin margin rounded. Pelvic fin inserted posteriorly to dorsal-fin base. Pelvic fin with i,5 (36) rays with first ray unbranched and greatly thickened. Pelvic fin with straight posterior margin.

Adipose-fin base longer than anal-fin base origin anterior to origin of anal-fin base, fin extending past anal-fin insertion. Margin strongly convex with sharply rounded edge, not deeply incised posteriorly. Caudal fin deeply emarginate or forked with tips of lobes pointed; fin with i,7,8,i* (34), or i,8,9,i (1) principal rays. Anal fin with short base, origin posterior to origin of adipose-fin base, with iii,6 (36) rays. Anal fin margin almost straight.

Coloration.—Dorsal and lateral surfaces of head and body brown. Dorsal and lateral regions of head and body sometimes with large black spots

Table 3. Morphometric data for *Amphilius grandis*. Range and mean include the syntypes.

	Syntypes (n=2)	Range (n=29)	Mean±SD
SL	136.1–160.0	40.4–181.4	
%SL			
Head length	27.4–28.5	23.4–28.7	26.7±1.3
Head width	22.1–22.1	20.0–23.9	21.5±1.0
Head height	12.9–13.0	11.3–14.8	13.0±0.9
Body depth	14.6–15.4	9.6–17.6	13.4±1.6
Body depth at anus	11.9–14.4	11.0–14.4	12.9±0.9
Predorsal-fin length	36.1–37.8	33.7–40.4	37.0±1.6
Prepectoral-fin length	22.3–23.8	17.3–24.5	21.3±1.7
Preanal-fin length	75.1–77.1	70.2–78.4	74.1±2.0
Dorsal-fin base length	8.4–9.2	7.9–13.9	10.4±1.5
Adipose-fin base length	18.6–19.0	15.0–26.0	20.6±2.7
Anal-fin base length	8.2–8.9	8.2–17.8	10.8±1.8
Pelvic-fin length	14.6–16.7	14.6–22.1	19.0±2.0
Pectoral-fin length	17.1–18.4	17.1–26.5	21.9±2.5
Anal-fin length	14.3–15.1	14.3–21.0	17.7±1.6
Caudal-peduncle length	18.6–19.0	14.6–19.0	17.0±1.1
Caudal-peduncle depth	9.9–10.1	9.0–12.6	10.9±0.9
Prepelvic-fin length	55.9–56.3	48.5–57.4	53.1±2.0
Postpelvic-fin length	47.0–48.2	46.0–52.1	49.0±1.5
Preanus length	61.0–62.5	58.9–66.0	61.7±1.5
%HL			
Snout length	45.6–49.2	43.0–55.1	48.4±3.3
Interorbital distance	25.0–25.1	22.1–32.6	26.3±2.4
Maxillary barbel length	53.5–55.9	49.7–83.8	66.9±8.5
Inner mandibular barbel length	23.5–28.7	20.2–33.6	29.0±3.5
Outer mandibular barbel length	36.7–41.8	30.5–62.0	48.8±7.3
Eye diameter	10.3–11.2	7.6–16.3	12.4±2.5

or blotches. Ventral region of head dark yellow. Ventral region of body brown to dark yellow. Light dorsal saddles absent. Dorsal, adipose, caudal, and anal fins brown. Pectoral and pelvic fins positioned horizontally with upper surfaces brown with light distal edge and lower surfaces light yellow. Dorsal and caudal fins often with medial bands of dark pigment. Maxillary and mandibular barbels brown. Caudal fin with dark crescent-shaped band at base.

Distribution.—Tana and Ewaso Ngiro (Ewaso Ngiro) River basins, Kenya (Fig. 3).

Amphilius krefftii Boulenger 1911

(Fig. 5; Tables 1, 4)

Amphilius krefftii Boulenger 1911: 356, fig. 276, Original description, Type locality: Usambara, in rivulet running from Anani Hills to Sigi River. [Sigi River basin, Tanzania]; Harry 1953: 189, synonymy; Copley 1958: 100 [Pangani River basin]; Whitehead 1958: 198 [Kenya and Tanzania]; Bailey 1969: 192 [Sigi and Pangani drainages]; Bernacek 1980: 36 [Tanzania]; Skelton 1984: 45, in synonymy of *A. uranoscopus*.

Pimelodus (*Amphilius*) *uranoscopus* (non Pfeffer) Hilgendorf 1905: 411 (in part), [Pangani drainage].

Amphilius grandis (non Boulenger) Copley 1941: 15 (in part), [Galana River basin] [BMNH 1969.3.24.63-69, BMNH 1969.3.24.70]; Copley 1958: 100 [Galana River basin] [BMNH 1969.3.24.63-69, BMNH 1969.3.24.70]; Bailey 1969: 192 (in part), [Pangani River basin].

Amphilius uranoscopus (non Pfeffer) Harry 1953: 189 (in part), synonymy; Skelton 1994: 126 (in part), [Galana and Pangani River basins]; Seegers et al. 2003: 37 (in part), [Pangani River basin].

Amphilius platychir (non Günther) Copley 1958: 100 (in part), [Pangani River basin].

Material Examined.—**Galana River basin:** BMNH 1969.3.24.63-69, Kenya, Tsabo [Tasvo] River tributary of Athi [Galana] River, mountain Mbololo, ca. 3º14'50"S, 38º27'45"E, (7: 43.6–99.5); BMNH 1969.3.24.70, Kenya, Voi River, Teita hills, Voi District, 3º26'51"S, 38º29'16"E (1: 106.6). **Lake Jipe basin:** BMNH 1966.6.28.1, Tanzania, Jipe River, ca. 3º43'45"S, 37º45'06"E (1: 69.7). **Pangani River basin:** BMNH 1905.7.25.41-42, Kenya, Kibosho, Kilimandjaro, ca. 3º 15'S, 37º19'E (2: 77.9–94.9); BMNH 1968.10.25.3, Tanzania, River Lume (upper reaches of Pangani River) at source, 5 miles east of Lake Chala, ca. 3º23'22"S, 37º43'45"E (1: 106.6); BMNH 1968.10.25.8, Tanzania, River Lume (upper reaches of Pangani River) east of Taveta, ca. 3º23'22"S, 37º43'45"E (1: 67.2); BMNH 1969.1.15.1, Tanzania, From a stream at Arusha in the foothills of Mount Meru, ca. 3º17'23"S, 36º 45'37"E (1: 84.7); CU 93726, Tanzania, Una River directly below Kinukamori Falls near Marangu, altitude 1343 m, 3º16'39"S, 37º31'10"E (5: 37.1–208.0); CU 93728, Tanzania, Kikuletwa River at below dam along road from Moshi to Samanga, altitude 757 m, 3º26'30"S, 37º 18'11"E (13: 30.1–80.3); CU 93729, Tanzania, Kikavu River at bridge on road from Moshi to Arusha, altitude 413 m, 3º19'08"S, 37º13'05"E (5: 36.8–85.1); CU 93736, Tanzania, Mkuzi River directly below Soni Falls on road from Mombo to Loshoto, altitude 1428 m, 4º50'51"S, 38º21'58"E (17: 37.3–118.3); CU 93737, Tanzania, Mkuzi River along road from Mombo to Loshoto, altitude 384 m, 4º52'04"S, 38º20'52"E (34: 34.7–109.4); CU 93738, Tanzania, Pangani River at bridge in Hale on road from Muheza to Segera, altitude 226 m, 5º17'50"S, 38º36'13"E (6: 34.9–60.7); FMNH 111684, Tanzania, West Usambara Mts., in river (stream) near Ambangulu Tea Estate factory, ca. 5º04'54"S, 38º 25'55"E (1: 29.0); MRAC 2010-08-P-3-5, ex. UF 170744, (3: 46.6–51.5); SAIAB 87473, ex. UF 170744, (3: 43.0–53.2); UF 170704, Tanzania, Pangani River along road from Same to Korogwe, altitude 350 m, 5º08'06"S, 38º23'4"E (1: 65.3); UF 170712, same data as CU 93738, (6: 32.4–72.2); UF 170719, same data as CU 93729, (5: 42.9–89.7); UF 170721, same data as CU 93728, (12: 30.0–115.9); UF 170722, same data as CU 93736, (18: 40.5–139.3); UF 170724, same data as CU 93726, (7: 39.9–201.5); UF 170744, same data as CU 93737, (28: 33.4–123.9). **Sigi River basin:** BMNH 1909.10.19.26–27, Tanzania, Usambara, in rivulet running from Anani Hills to Sigi R., ca. 5º0'S, 38º48'E (2: 47.5–86.0, Syntypes); BMNH 1968.10.25.5-6, Tanzania, Kisiwani, near Amani, East Usambura mountains, elev. 1,475 ft., ca. 5º11'34"S,

38º37'39"E (2: 36.2–43.1); BMNH 1968.10.25.7, Tanzania, River Sigi, east Usumbura Mountains, ca. 5º0'S, 38º48'E (1: 72.7); CAS 63737, Tanzania, Zigi [Sigi] R., Corn mill, in the Usambara Mountains, 10 km southeast (via the Amani-Muheza Road) of Amani, ca. 5º07'44"S, 38º42'57"E (1: 47.8); CU 93735, Tanzania, Kihuhwi River at bridge on road from Muheza to Amani, altitude 225 m, 5º07'39"S, 38º 41'23"E (1: 63.0); FMNH 111678, Tanzania, East Usambara Mountains, 4.5 km ESE Amani, Monga Tea Estate, ca. 5º05'S, 38º36'E (1: 112.0); MCZ 51041, Tanzania, Amani, Usambara Mts., ca. 5º 05'S, 38º 36'E (1: 90.0); UF 170713, same data as CU 93735, (2: 70.3–73.0).

Diagnosis.—Diagnostic characters are summarized in Table 1. *Amphilius krefftii* is distinguished from *A. chalei*, *A. grandis, A. athiensis,* and *A. uranoscopus* by its emarginate (vs. forked) caudal fin, and from *A. grandis* and *A. athiensis* by the presence of distinct pale patches at the origin and insertion of the dorsal fin. It also differs from *A. chalei*, *A. athiensis, A. grandis,* and *A. uranoscopus* by having a short body with usually 36 vertebrae (vs. elongate body with 37–

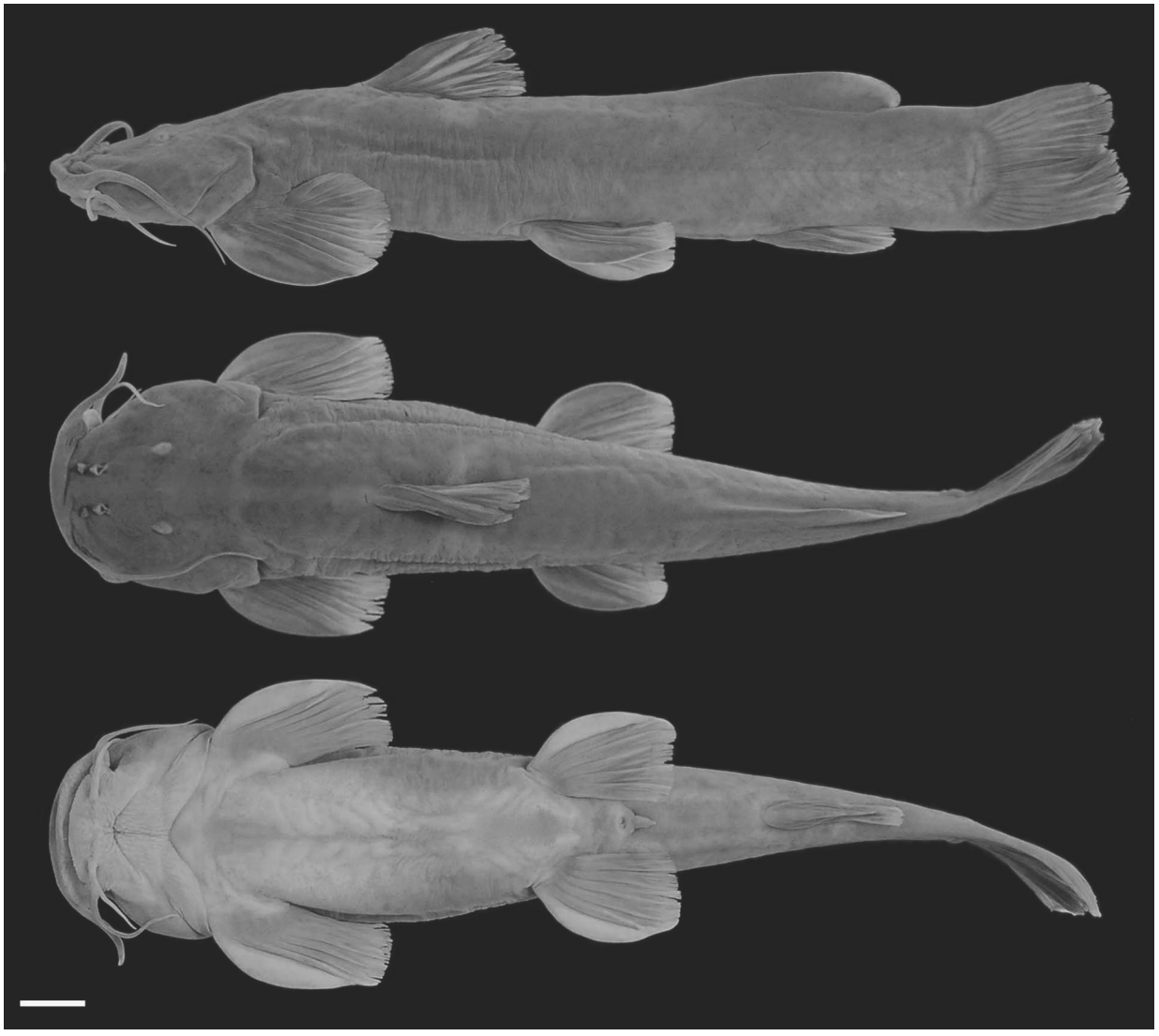

Figure 5. Lateral, dorsal and ventral views of *Amphilius krefftii*, UF 170722, 139.3 mm SL, Pangani River basin, Tanzania. Scale bar equals 1 cm. Color version available online at http://www.flmnh.ufl.edu/bulletin/vol49no2/figure5.pdf.

40 vertebrae). It also differs from *A. cryptobullatus, A. athiensis,* and *A. uranoscopus* by the absence of dark marking on the body (vs. body mottled in *A. cryptobullatus,* finely spotted in *A. athiensis* and with diffuse black stripe along side in *A. uranoscopus*). *Amphilius krefftii* also differs from *A. athiensis* by the absence of spots on the fins (vs. fins heavily spotted). *Amphilius krefftii* also differs from *A. chalei* by having a deeper body (body depth at anus 11.1–16.5 % SL vs. 8.9–10.8% SL) and a deeper caudal peduncle (caudal peduncle depth 10.2–13.5 % SL vs. 7.1–9.7% SL). It also differs from *A. cryptobullatus* by having normally developed bilateral bony swimbladder capsules (vs. bilateral bony swimbladder capsules extremely large).

Description.—Morphometric data as in Table 4. Body elongate, ventral profile flattened ventrally to anal-fin base, then tapered dorsally to end of caudal peduncle. Dorsal profile rising gently from tip of snout to origin of dorsal fin, then nearly horizontal to end of caudal peduncle. Greatest body depth at dorsal-fin origin. Caudal peduncle laterally compressed, without crenellated epidermal fold.

Table 4. Morphometric data for *Amphilius krefftii*. Range and mean include the syntypes.

	Syntypes (n=2)	Range (n=164)	Mean±SD
SL	47.5–86.0	40.5–208.0	
%SL			
Head length	23.5–23.6	22.1–30.0	25.0±1.2
Head width	20.2–20.6	19.8–24.0	21.3±0.8
Head height	12.6–12.8	9.1–14.1	12.3±0.8
Body depth	10.9–11.6	9.7–18.3	14.1±1.5
Body depth at anus	12.2–13.5	11.1–16.5	14.0±1.0
Predorsal-fin length	34.3–34.5	31.8–38.3	35.9±1.2
Prepectoral-fin length	19.8–20.8	16.9–23.9	19.7±1.2
Preanal-fin length	72.8–73.7	70.1–77.7	73.4±1.4
Dorsal-fin base length	8.8–9.53	7.3–12.9	10.5±1.0
Adipose-fin base length	21.0–23.7	19.2–28.2	24.9±2.0
Anal-fin base length	10.6–10.7	7.7–13.1	10.5±1.0
Pelvic-fin length	19.3–19.8	14.2–20.9	18.8±1.2
Pectoral-fin length	19.0–21.3	17.7–24.8	21.7±1.2
Anal-fin length	16.2–17.9	15.2–21.7	17.9±1.2
Caudal-peduncle length	17.3–18.6	14.5–22.7	17.6±1.2
Caudal-peduncle depth	10.5–11.5	10.2–13.5	12.0±0.6
Prepelvic-fin length	52.1–52.6	48.7–55.3	50.9±1.4
Postpelvic-fin length	47.4–50.0	46.8–52.9	40.0±1.3
Preanus length	61.3–63.2	58.1–64.9	61.2±1.5
%HL			
Snout length	43.8–44.1	43.0–54.6	48.7±2.3
Interorbital distance	23.8–25.9	22.5–29.6	26.5±1.8
Maxillary barbel length	69.6–82.2	41.3–93.6	71.1±9.2
Inner mandibular barbel length	27.2–29.5	19.8–46.9	31.7±4.6
Outer mandibular barbel length	46.4–54.0	32.0–67.3	50.7±6.9
Eye diameter	12.4–16.1	5.9–17.5	12.5±1.8

Anus and urogenital openings located at insertion pelvic fin. Skin smooth. Lateral line complete, extending from dorsal edge of opercular cavity to base of caudal fin. Total vertebrae 36 (9), 37 (1), or 38* (1). Abdominal vertebrae 20 (10) or 21* (2). Caudal vertebrae 16 (10) or 17* (1). First dorsal pterygiophore intercept count 1 (11) or 2* (1).

Head and anterior part of body depressed and broad. Head wedge-shaped in lateral view. Snout broad, blunt when viewed from above. Head becoming wider from tip of snout to pectoral-fin base. Branchiostegal membranes moderately joined at isthmus forming a *V*-shaped or deeply concave connection.

Mouth broad, gently curved, subterminal. Lips moderately fleshy, papillate. Rictal lobe large and papillate. Anterior portion of premaxillary tooth band exposed with mouth closed. Premaxillary tooth patches joined, forming *U*-shaped band, with short conical teeth. Dentary teeth short and conical, tooth patches forming *U*-shaped band, separated medially.

Three pairs of simple, tapered circumoral barbels. Maxillary barbel large, fleshy, and flattened with pointed tip; barbel extending posterolaterally from corner of mouth to middle of pectoral-fin base. Outer mandibular barbel thin with pointed tip, origin at posterior corner of lower jaw, extending to edge of branchiostegal membrane. Inner mandibular barbel originates anterolaterally of inner mandibular barbel, extending to edge of branchiostegal membrane. Branchiostegal membrane with 6 (25) or 7* (159) rays. Gill rakers on first epibranchial, 2* (48), 3* (129), or 4 (1); rakers on first ceratobranchial 5, (23), 6 (103), 7 (50), or 8 (3); total gill rakers on first arch 7 (11), 8* (37), 9* (89), 10 (39), or 11 (3).

Eyes small, positioned dorsolaterally approximately midway between tip of snout and posterior margin of operculum. Horizontal diameter of eye slightly wider than vertical diameter. Eye without free orbit; covered with skin confluent with dorsal surface of head. Anterior and posterior nares with prominent tubular rims; nares separate but relatively close to each other. Posterior nare located about midway between eye and tip of snout.

Dorsal-fin origin at point over tip of pectoral fin. Dorsal fin with i, 5 (1) or i,6* (185) rays, and fin margin slightly convex. Pectoral fin with i,8 (1), i,9 (59), i,10* (124), or i,11 (2) rays with first ray unbranched and greatly thickened. Pectoral fin with 4 or 5 innermost rays progressively shorter making posterior fin margin rounded. Pelvic fin inserted posteriorly to dorsal-fin base. Pelvic fin with i,5 (186) rays with first ray unbranched and greatly thickened. Pelvic fin with straight posterior margin.

Adipose-fin base longer than anal-fin base; origin anterior to origin of anal-fin base, fin extending past anal-fin insertion. Margin strongly convex with sharply rounded edge, not deeply incised posteriorly. Caudal fin emarginate with tips of lobes rounded, with i,5,6,i (1), i,6,7,i (1), i,7,7,i (11), or i,7,8,i* (169) principal rays. Anal fin with short base, origin posterior to origin of adipose-fin base; fin with iii,5* (32), iii,6* (133), or iii,7 (21) rays. Anal fin margin almost straight.

Coloration.—Dorsal and lateral surfaces of head and body brown. Ventral region light brown. Light dorsal saddles at origin and insertion of dorsal-fin and adipose-fin. Dorsal, adipose, caudal, and anal fins brown. Pectoral and pelvic fins positioned horizontally with upper surfaces brown and lower surfaces light yellow. Maxillary and mandibular barbels brown. Caudal fin with dark crescent-shaped band at base. Juvenile coloration similar to that of adult, except all fins light yellow, with small blotches of brown pigment on branched rays. Pectoral and pelvic fins with first unbranched ray dark brown dorsally.

Distribution.—Tsavo River system of the Galana River basin, Kenya; Sigi and Pangani River basins, and Lake Jipe basin, Tanzania.

DISCUSSION

Amphilius uranoscopus was described from four specimens from the Wami River basin in eastern Tanzania (Pfeffer 1889). The poor condition of the two surviving type specimens (ZMH 11944 and ZMH 8401), and the lack of additional specimens from the Wami River basin made it difficult to determine the exact identity of *A. uranoscopus* and led to the recognition of

A. uranoscopus as a widespread and extremely variable species. In the fall of 2007, the first author collected 57 specimens of *A. uranoscopus* from three localities in the Wami River basin which, for the first time, allowed a detailed comparison of *A. uranoscopus* to specimens identified as *A. uranoscopus* from Kenya. We concluded, based on our detailed comparisons of this new material to specimens of *Amphilius* from Kenya and the Pangani and Sigi River basins in northern Tanzania, that two species previously considered synonyms of *A. uranoscopus* should be removed from synonymy, and a new species should be recognized from the Athi River.

Amphilius grandis was described by Boulenger from the Tana River basin in Kenya, and soon after he described *A. oxyrhinus* from the Ewaso Ngiro River basin (Boulenger 1912). We provisionally consider *A. oxyrhinus* to be a synonym of *A. grandis,* but study of additional material from the Tana and Ewaso Ngiro River basins may reveal it to be a distinct species. *Amphilius oxyrhinus* was diagnosed from *A. grandis* by Boulenger primarily by its more pointed snout. We found the holotype of *A. oxyrhinus* to have a more pointed snout then the syntypes of *A. grandis*, and to have dark blotches on the body (vs. body uniformly light brown in the syntypes of *A. grandis*). We initially identified all specimens that had back spots or blotches on the body as *A. oxyrhinus*. These specimens tended to have a more pointed snout and fewer gill rakers, but all of these specimens were much smaller then the holotype of *A. oxyrhinus.* Also, the smallest specimens that we identified as *A. oxyrhinus* did not appear to have a more pointed snout than the specimens we identified as *A. grandis*. Additionally, all of the specimens we identified as *A. oxyrhinus* were from the Tana River basin while almost all of the material we identified as *A. grandis* was from the Ewaso Ngiro River basin, which was not consistent with the type localities of these two species. For these reasons we feel it is best to consider *A. oxyrhinus* a synonym of *A. grandis*.

The recognition of *A. uranoscopus* as a single widespread species has been based largely on the lack of clear meristic and morphometric differences between populations. Although differences in pigment pattern and caudal-fin shape have been noticed previously (Copley 1958; Seegers 1996), this is the first study to examine variation in these characters among populations.

Although there is some degree of intraspecific variation in pigment pattern, certain aspects are consistent and are useful in distinguishing the species. *Amphilius athiensis* and sometimes *A. grandis* have dark markings on the body in the form of blotches or spots. Dark blotches or spots are generally absent in *A. krefftii* and *A. uranoscopus*. *Amphilius krefftii* may have a few dark areas on its body, but it never has distinct dark blotches or spots. In *A. athiensis,* the dark markings are almost always in the form of small dark spots (although a few larger blotches may also be present), and spots are also always present on the head. In *A. grandis*, the dark markings are mostly in the form of large blotches or spots, with only a few smaller spots or blotches. Spots on the head are usually absent or indistinct. The pectoral, pelvic, dorsal, anal, adipose, and caudal fins of *A. athiensis* are also heavily spotted. *Amphilius grandis*, *A. krefftii,* and *A. uranoscopus* lack spots on the fins, although some dark pigment may be present. Light saddles are present at the base of the dorsal and adipose fins in *A. krefftii* and *A. uranoscopus*, but are absent in *A. grandis* and *A. athiensis*.

In *A. athiensis, A. grandis* and *A. uranoscopus*, the caudal fin is deeply emarginate or moderately forked, but it is weakly emarginate in *A. krefftii*. The degree of forking decreases with the size of the specimen, so large specimens of *A. athiensis, A. grandis,* and *A. uranoscopus* have less deeply forked caudal fins than smaller specimens; however, the degree of forking is still greater than what is typically seen in *A. krefftii*. The largest specimens of *A. krefftii* examined had truncate caudal fins.

In addition to caudal fin shape, *A. krefftii* is distinctive in having a shorter body than does *A. athiensis, A. grandis,* and *A. uranoscopus*. *Amphilius krefftii* usually has 36 post-Weberian vertebrae, while *A. grandis* usually has 37–40, and *A. athiensis* and *A. uranoscopus* usually have 38–39 post-Weberian vertebrae (Table 5).

COMPARATIVE MATERIAL EXAMINED

Amphilius chalei: **Rufiji River basin:** CU 93744, Tanzania, Little Ruaha River at bridge in Ihembe on road from Iringa to Dabaga, altitude 1680 m, 7°54'41"S, 35°47'44"E (63: 32.2–108.5); UF 170728, same data as CU 93744, (63: 26.6–123.9).

Amphilius cryptobullatus: **Congo River basin:** CU 91072, Zambia, Lubulafita River at bridge on Mwenda-Kawambwa road, 9°59'17"S, 29°06'54"E (20: 48.9–112.9). Vertebrae data from Skelton (1986).

Amphilius uranoscopus: **Wami River basin:** BMNH 2010.2.16.1-2, ex. UF 170723, (2: 53.5–70.7); CU 93740, Tanzania, Divue River above and below falls along road from Dumila to Turiani, altitude 374 m, 6°10'27"S, 37°35'00"E (21: 31.7–97.8); CU 93741, Tanzania, Mbulumi River at bridge in Turiani on road from Dumila to Turiani, altitude 377 m, 6°08'38"S, 37°35'47"E (5: 61.0–109.4); CU 93742, Tanzania, Wami River at rapids above bridge on road from Chalinze to Segera, altitude 60 m, 6°14'42"S, 38°23'00"E (1: 81.4); MRAC 2010-08-P-1-2, ex. UF 170723, (2: 58.6–68.3); SAIAB 87472, ex. UF 170723, (2: 49.0–62.7); UF 170716, same data as CU 93741, (7: 26.3–108.5); UF 170718, same data as CU 93742, (2: 43.3–46.8); UF 170723, same data as CU 93740, (19: 31.1–96.2); ZMH 8401, Tanzania, Bad bei Ushonda (Ungúu), ca. 6°20'S, 37°10'E (paralectotype; photographs and x-rays examined); ZMH 11944, same data as ZMH 8401, (lectotype; photographs and x-rays examined).

Table 5. Frequency distribution in total number of vertebrae in species of the *Amphilius uranoscopus* group.

Total Vertebrae	35	36	37	38	39	40
A. grandis			8	15	11	1
A. athiensis				8	3	2
A. krefftii		9	1	1		
A. uranoscopus				9	5	
A. chalei				9	1	
A. cryptobullatus	4	73	42	2		

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