

# Copeia

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**New Species of *Congoglanis* (Siluriformes: Amphiliidae) from the Southern Congo River Basin**

**Richard P. Vari<sup>1</sup>, Carl J. Ferraris, Jr.<sup>2</sup>, and Paul H. Skelton<sup>3</sup>**



## New Species of *Congoglanis* (Siluriformes: Amphiliidae) from the Southern Congo River Basin

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**A new species of catfish of the subfamily Doumeinae, of the African family Amphiliidae, was discovered from the Kasai River system in northeastern Angola and given the name *Congoglanis howesi*. The new species exhibits a combination of proportional body measurements that readily distinguishes it from all congeners. This brings to four the number of species of *Congoglanis*, all of which are endemic to the Congo River basin.**

RECENT analyses of catfishes of the subfamily Doumeinae of the African family Amphiliidae documented that the species-level diversity and morphological variation of some components of the subfamily were dramatically higher than previously suspected (Ferraris et al., 2010, 2011). One noteworthy discovery was that what had been thought to be *Doumea alula* not only encompassed three species, but also that they all lacked some characters considered diagnostic of the Doumeinae. Ferraris et al. (2011) assigned those species to a new genus, *Congoglanis*, which they hypothesized to be the sister group to all other members of the subfamily. In their revision of *Congoglanis*, those authors noted that two specimens of the genus in poor condition from the Kasai River system in the southern portion of the Congo basin could not be confidently assigned to any of the species recognized in their study. The authors deferred from formal taxonomic action involving those specimens pending the examination of more extensive samples of *Congoglanis* from that drainage system. Critical analysis of an additional series of specimens that originated in the Kasai River system in northeastern Angola demonstrated that the populations of *Congoglanis* in that region include an additional undescribed species that we describe herein. This brings to four the number of species of *Congoglanis*, all of which are endemic to the Congo River basin.

### MATERIALS AND METHODS

Counts and measurements follow the methods outlined by Skelton (1981, 2007), with fin-ray counts taken from whole specimens. Vertebral counts were taken from radiographs and include the five Weberian-complex centra that precede the first rib-bearing vertebra, and a single complex ural centrum. A summary of measured characters is presented in Table 1. Abbreviations in the text are standard length (SL) and head length (HL). An asterisk following a meristic value in the description indicates that of the holotype. Institutional codes are as listed at <http://www.asih.org/node/204>. Comparative materials for this study include all of the material reported in Ferraris et al. (2010, 2011).

### *Congoglanis howesi*, new species

Figures 1, 2; Table 1

*Doumea alula*, Poll, 1967:265, fig. 126 [in part, samples from Angola, Luachimo River, Luachimo rapids; habitat information; indigenous names].

**Holotype.**—MRAC 162332, 81 mm SL, Angola, Lunda Norte, Kasai River basin, Luachimo River, Luachimo rapids, 7°21'S, 20°50'E, in residual pools downstream of dam, A. de Barros Machado, E. Luna de Carvalho, and local fishers, 10 February 1957.

**Paratypes.**—MRAC 163333–163336, 4, 39–113 mm SL, USNM 405307, 1, 74 mm SL, collected with holotype; MRAC 162330, 1, 96 mm SL, Angola, Lunda Norte, Kasai River basin, Luachimo River, Luachimo rapids, 7°21'S, 20°50'E, local fishers, 20 October 1955.

**Diagnosis.**—*Congoglanis howesi* differs from *C. alula* in the caudal-peduncle length relative to the caudal-peduncle depth (360–380% vs. 260–330%), the head depth (46–57% of HL vs. 38–45%, respectively), and the more attenuate head (width of the head immediately anterior of the pectoral fin equal to the distance from the tip of the snout to the middle or rear of each orbit vs. equal to the distance from the tip of the snout to approximately one orbital diameter posterior of the orbit, respectively). *Congoglanis howesi* differs from *C. inga* in the length of the maxillary barbel (extending beyond posterior nostril but falling distinctly short of vertical through anterior margin of orbit vs. extending well beyond anterior margin of orbit), the body width at the dorsal-fin origin (14–16% of SL vs. 17–20%, respectively), the postorbital length (29–32% of HL vs. 32–35%, respectively), the caudal-peduncle length relative to the caudal-peduncle depth (360–380% vs. 210–290%, respectively), the number of vertebrae (38–39 vs. 35–37, respectively), and, to a lesser degree, the length of the caudal peduncle (20–24% of SL, mean 22.6% vs. 16–21%, mean 18.4%, respectively). *Congoglanis howesi* differs from *C. sagitta* in the length of the pelvic fin (22–28% of SL vs. 19–21%, respectively), the head width (75–78% of HL vs. 63–73%, respectively), the length of the adpressed anal fin (reaching beyond the vertical through the posterior

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**Table 1.** Proportional Measurements, Expressed as a Percentage, for *Congolanis howesi*. Range and mean values are based on the holotype and six paratypes.

	Holotype	Range	Mean
Standard length (mm)	81	39–113	—
Predorsal length/SL	36	35–37	36.1
Head length/SL	21	20–25	21.7
Body depth at dorsal-fin origin/SL	14	12–15	13.3
Body width at dorsal-fin origin/SL	14	14–16	14.6
Caudal-peduncle length/SL	22	20–24	22.6
Caudal-peduncle depth/SL	6	6–6	6.0
Anal-fin base length/SL	8	8–9	8.4
Dorsal-fin length/SL	21	21–25	21.8
Pectoral-fin length/SL	27	26–32	28.9
Pelvic-fin length/SL	24	22–28	25.2
Posterior limit of insertion pelvic-fin base to anus/SL	9	8–9	8.5
Head depth/HL	57	47–57	51.0
Head width/HL	77	75–78	75.6
Snout length/HL	58	56–65	60.3
Orbit diameter/HL	12	12–13	12.6
Interorbital width/HL	28	25–28	26.9
Postorbital length/HL	29	29–32	29.8
Postorbital length/Snout length	47	46–55	49.2
Caudal-peduncle length/ Caudal-peduncle depth	367	360–380	375
Body width/Body depth	110	100–120	113

terminus of the adipose fin vs. reaching to or falling short of that vertical, respectively), and, to a lesser degree, the length of the pectoral fin (26–32% of SL, mean 28.9% vs. 23–27%, mean 24.3%, respectively).

**Description.**—Maximum observed size: 113 mm SL. Slender species, with ventral surface of head and portion of body to anal-fin origin flattened. Body width constant or slightly tapering posteriorly between pectoral- and pelvic-fin insertions; distinctly tapering posterior of pelvic-fin insertion. Greatest body depth located at dorsal-fin origin. Body smooth skinned. Dorsal and ventral profiles of body from head to vertical through anal fin nearly horizontal other than along base of dorsal fin but converge from that region to posterior end of caudal peduncle. Lateral line complete; running along midlateral surface of body. Short, more-or-less uniformly spaced dorsal and ventral branches extend off main portion of lateral line. Body without dorsolateral or ventrolateral vertebral processes extending to skin surface in region from adipose-fin base posteriorly to caudal-fin base. Caudal peduncle elongate, slender; compressed posteriorly but with width and height equal at terminus of anal-fin base; its length approximately equal to head length. Least depth of caudal peduncle located immediately anterior of caudal-fin base.

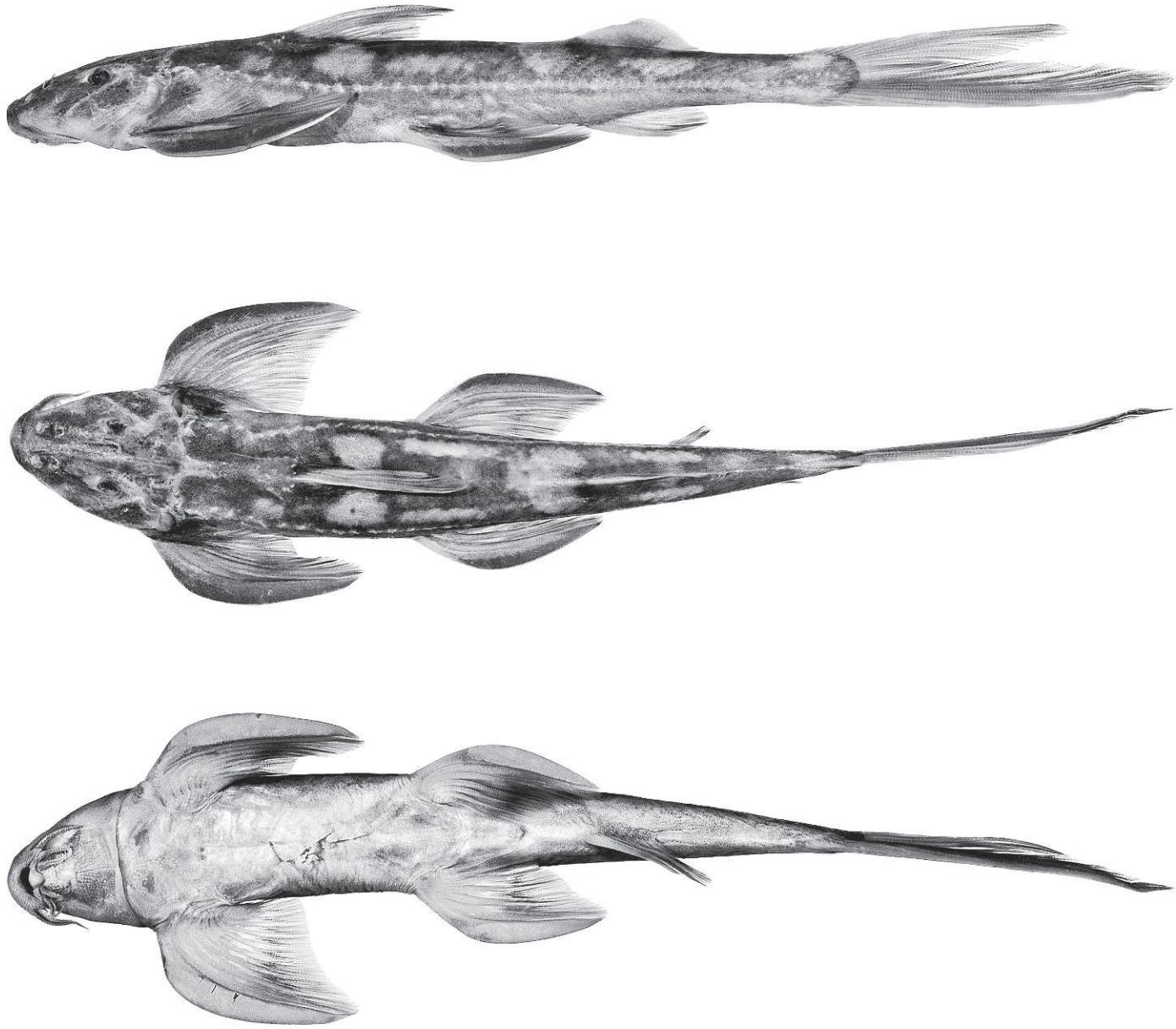
Head profile acutely triangular from dorsal view with lateral margin slightly convex; snout tip rounded. Head pointed and depressed from lateral view. Snout moderately long, relatively slender and tapering anteriorly. Eye slightly horizontally elongate and entirely within posterior half of head; without free orbital margin. Diameter of eye slightly more than one-half of interorbital distance. Distance from posterior naris to anterior margin of eye approximately equal to distance between anterior naris and tip of snout.

Posterior naris distinctly closer to anterior naris than to eye. Distance between nares of each side slightly less than one-half distance of each to contralateral naris.

Mouth subterminal, small, ovoid when open, with fleshy tuberculate upper lip and smooth firm lower lip flanked to each side by tuberculate section. Upper jaw teeth in broad crescentic patch continuous across midline. Lower jaw teeth in oval patch on each side of symphysis, with narrow median gap. Teeth in both jaws long, slender and slightly curved; numbers of teeth in upper and lower jaws about equal. Barbels tuberculate and distally tapered. Maxillary barbel extending beyond posterior nostril but falling distinctly short of vertical through anterior margin of eye. Medial mandibular barbel shortest, with base situated slightly lateral of midline and approximately in line with lateral margin of smooth portion of lower lip. Lateral mandibular barbel arises from angle of mouth and ends distinctly short of vertical through tip of maxillary barbel. Branchiostegal membrane continuous across ventral midline with central portion of posterior margin straight. Gill slit extends posterodorsally to horizontal approximately through ventral margin of eye. Supraoccipital process elongate, slightly narrowing posteriorly and separated by small gap from small triangular nuchal shield; gap less obvious in largest examined specimen.

Dorsal fin falcate; first branched ray longest. Tip of adpressed dorsal fin extends past vertical through base of pelvic fin. First dorsal-fin ray segmented, not forming spine. Adipose-fin origin located slightly posterior of vertical through anal-fin origin. Fin small, adnate with posterior limit of fin falling short of vertical through tip of adpressed anal fin. Pectoral fin large and falcate; first ray longest, curved, pectinate and broad with fleshy pad covering ventral surface. Distal margin of pectoral fin slightly concave. Innermost pectoral-fin rays short, posterodorsally oriented and adpressed to body wall. Tip of adpressed pectoral fin falling slightly short of pelvic-fin origin in smallest examined specimens and with gap increasing in larger specimens, but always extending beyond vertical through posterior terminus of dorsal-fin base. Pelvic fin moderately large and only somewhat smaller than pectoral fin in specimens of all sizes; distal margin slightly concave, with first ray longest. First pelvic-fin ray curved and pectinate, with ventral surface covered by fleshy pad. Pelvic-fin origin located distinctly posterior of vertical through posterior terminus of dorsal-fin base. Tip of adpressed pelvic fin extends somewhat beyond anal-fin origin in smaller individuals but only to that point in largest specimen. Anal fin small, with straight distal margin. Tip of adpressed anal fin extends beyond vertical through posterior limit of adipose fin, more so in smaller individuals. Anal-fin base slightly less than one-half length of adipose-fin base. Caudal fin deeply forked, with lobes large, acutely pointed and asymmetrical, with ventral lobe broader and distinctly longer than dorsal lobe. Middle caudal-fin rays slightly less than one-half length of longest rays of dorsal lobe. Dorsal-fin rays i,6,i\*(4) or i,7(2); pectoral-fin rays i,10\*(1), i,11(4), or i,12(1); pelvic-fin rays i,5\*(6); anal-fin rays iii,5(1), ii,6,i(1), iii,6(1), ii,7,1(1), or iii,7\*(2). Vertebrae 38(5) or 39(2). Ribs 12(7).

**Coloration in alcohol.**—Coloration of lateral and dorsal surfaces of head and body generally dark, with variably



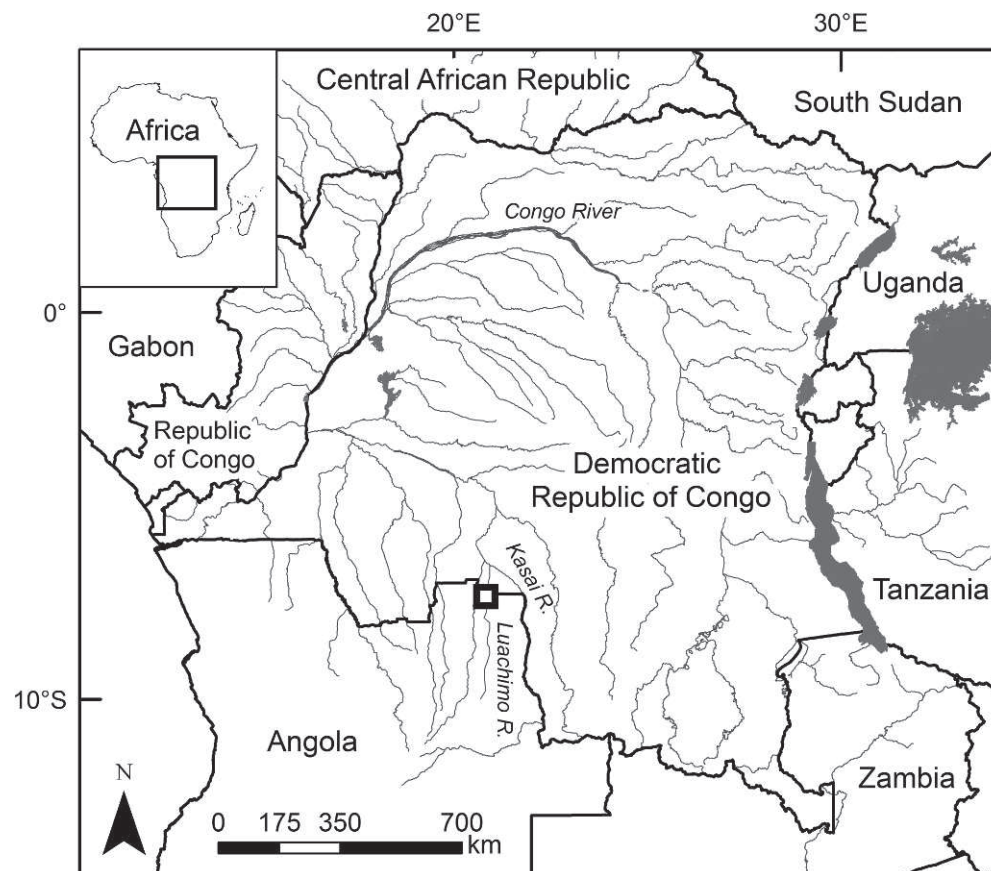
**Fig. 1.** *Congoglanis howesi*, new species, holotype, 81 mm SL, MRAC 162332, Angola, Lunda Norte, Kasai River basin, Luachimo River, Luachimo rapids, 7°21'S, 20°50'E. Dorsal, lateral, and ventral views.

distinct lighter regions. Darker coloration on body extending ventral of lateral line on abdomen and caudal peduncle; boundary between dark brown pigmentation of dorsal and dorsolateral regions and lighter coloration of ventrolateral and ventral regions relatively straight and horizontal from pectoral-fin base to caudal peduncle.

Five or six pale patches distributed in irregular horizontal pattern along dorsolateral part of body. Anteriormost patch present only in some specimens, sometimes only on one side. Patch ovoid, horizontally elongate, commencing just dorsal of lateral line and extending posteriorly to point somewhat anterior, to slightly posterior, of vertical through dorsal-fin origin. Second patch irregularly rounded, centered along vertical through base of last dorsal-fin ray. Third patch horizontally elongate and slender, extending above lateral line from vertical through pelvic-fin origin to vertical through midlength of adpressed pelvic fin. Ventral margin of fourth patch variably positioned between level with ventral margin of third patch and somewhat more dorsal

position. Contralateral fourth patches in contact along dorsal midline and forming saddle immediately anterior of adipose-fin base in smaller individuals; dorsal contact between patches less obvious in larger specimens. Fifth patch horizontally elongate and located entirely above lateral line and between verticals through middle and posterior limit of adipose fin. Sixth patch horizontally elongate and of variable length on dorsal portion of posterior half of caudal peduncle, terminating posteriorly at anterior limit of dark spot at caudal-fin base. Semicircular dark spot at caudal-fin base straight anteriorly, broadly convex posteriorly and more obvious in larger individuals. Spot extending nearly to dorsal and ventral margins of caudal peduncle. Ventrolateral portion of abdomen and ventral part of caudal peduncle with scattered dark chromatophores; chromatophores absent on ventral portion of abdomen as far posterior as pelvic fin. Pale stripe extends along entire length of lateral line.

Dorsal and lateral portions of head dark brown other than for variably shaped pale patch immediately posterior of eye;



**Fig. 2.** Map of west central Africa with type locality of *Congoglanis howesi* indicated by square.

patch smaller than, or approximately equal to, size of eye. Maxillary barbel unpigmented other than for dusky basal pigmentation on dorsal surface of smaller individuals, with dark pigmentation extending more posteriorly in larger specimens. Mandibular barbels unpigmented.

Pectoral and pelvic fins of small to mid-sized specimens brown dorsally except for unpigmented transverse patch extending across central portion of inner rays and pale distal regions. Transverse patch faint or missing in larger individuals, with distal lighter region on each fin less obvious. Pectoral and pelvic fins unpigmented ventrally other than for scattered dark chromatophores on basal portions of innermost rays. Dark pigmentation on dorsal surface of distal portions of rays appears as dusky region extending along sub-marginal portion of ventral surface of both fins.

Dorsal fin with dense concentrations of dark chromatophores along rays, more so on distal portions of anterior rays. Interradial membranes of dorsal fin sometimes with few scattered chromatophores. Adipose fin darkly pigmented basally and dusky more distally. Anal fin with dense concentrations of dark chromatophores along rays. Interradial membranes of anal fin with dark chromatophores more concentrated on basal portions of anterior region of fin and along central portions of anterior rays. Caudal fin with scattered dark chromatophores on all rays, but pigmentation most concentrated on ventral lobe with broad stripe extending along lobe and less obvious stripe along dorsal lobe.

**Distribution.**—Known only from the type locality at the Luachimo rapids of the Kasai River system in the southeastern portion of the Congo River basin in northeastern

Angola. Only one other species of *Congoglanis*, *C. alula*, is known to occur in the Kasai River basin (Ferraris et al., 2011:fig. 3), although not in the Luachimo River system.

**Habitat.**—No specific habitat information was associated with the types, all of which were collected in the rapids of the Luachimo River. Such high-energy settings are a common habitat for species of *Congoglanis* (Ferraris et al., 2011) and the closely related *Doumea* (Lévêque and Paugy, 1999).

**Etymology.**—The species name, *howesi*, is in honor of Gordon J. Howes, formerly of the Natural History Museum, London, in recognition of his many contributions to ichthyology.

#### KEY TO THE SPECIES OF CONGOGLANIS

- 1a. Maxillary barbel extends well past anterior margin of orbit ..... *Congoglanis inga*  
(lower Congo River, in the vicinity of Inga Rapids, Democratic Republic of the Congo)
- 1b. Maxillary barbel not reaching to anterior margin of orbit ..... 2
- 2a. Pelvic fin 19–21% SL, anal-fin origin well in advance of tip of adpressed pelvic fin ..... *Congoglanis sagitta*  
(tributaries of Lake Mweru and the Luongo and Chambeshi rivers, Zambia)
- 2b. Pelvic fin 22–28% SL, anal-fin origin at, or near, tip of adpressed pelvic fin ..... 3
- 3a. Caudal-peduncle length 2.6–3.3 times caudal-peduncle depth; head depth 38–45% of HL .... *Congoglanis alula*  
(middle reaches of Congo River system and

tributaries, in the Democratic Republic of the Congo and the Central African Republic)

- 3b. Caudal-peduncle length 3.6–4.0 times caudal-peduncle depth; head depth 47–57% of HL .....  
 ..... *Congoglanis howesi*, new species  
 (Luachimo River in the Kasai River basin in northeastern Angola)

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