Catfish Genus *Corymbophanes* (Loricariidae: Hypostominae) with Description of One New Species: *Corymbophanes kaiei*

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The genus *Corymbophanes* and its type, *Corymbophanes andersoni*, are redescribed, and one new species, *Corymbophanes kaiei* is described. Among loricariids, *Corymbophanes* is diagnosed by a unique combination of characteristics: absence of dorsal flap of iris; absence of adipose fin; and presence of an elongate postdorsal ridge of 13–17 raised median unpaired plates. *Corymbophanes kaiei* differs from *C. andersoni* by the presence of vermiculations on the abdomen (vs abdomen lightly colored in *C. andersoni*), presence of distinct alternating light and dark bands on the caudal fin (vs light bands largely absent), anal fin I,5 (vs I,4), caudal peduncle moderately (vs strongly) compressed, and three to four (vs five) plates below the adpressed pectoral fin spine. *Corymbophanes* is known only from the Potaro River Drainage above Kaieteur Falls in west-central Guyana. *Corymbophanes bahianus* is transferred to *Hemipsilichthys*.

I N 1908, Carl Eigenmann completed a remarkable survey of the fishes of Guyana documented in his monograph *The Fishes of British Guiana* (Eigenmann, 1912). His survey included the Potaro River, a tributary of the Essequibo (Atlantic Drainage) that originates on the Guyana Shield in the Pakaraima Mountains of west-central Guyana. At the edge of the shield plateau, the Potaro River is separated into upper and lower reaches by Kaieteur Falls, the largest single-drop waterfall in the world (226 m). Until recently, no other ichthyologists had collected in the Upper Potaro, and some species described by Eigenmann were known only from the types.

Eigenmann (1909) described *Corymbophanes andersoni* as a new genus and species based on a single individual from Aruataima Falls, a cataract on the Upper Potaro that has since been renamed Chenapou Falls (Fig. 1). *Corymbophanes* is readily distinguished from most other loricariids by a series of raised median unpaired plates, hereafter referred to as a postdorsal ridge, between the dorsal fin and dorsal caudal fin spine. Two additional species were originally described in *Corymbophanes* but are referable to other loricariid genera. Schultz (1944) described *Corymbophanes venezuelae* from Caripito near the northeast coast of Venezuela, and Gosline (1947) described *Corymbophanes bahianus* from eastern Brazil. Isbrücker (1980) transferred *C. venezuelae* to *Chaetostoma* Heckel, and based on examination of types and additional material, we place *C. bahianus* in *Hemipsilichthys* Eigenmann and Eigenmann (see also Armbruster, 1997). Thus, the only described species of *Corymbophanes* is *C. andersoni*.

In 1998, we collected additional specimens of *C. andersoni* from the type locality and specimens of an undescribed *Corymbophanes* from nearby Oung Creek, a small tributary of the Chenapou River (Fig. 1). We redescribe *Corymbophanes* and *C. andersoni*, describe *Corymbophanes kaiei* new species and discuss possible relationships of *Corymbophanes* to other loricariids. We also speculate on the historical biogeography of the eastern Guyana Plateau based on current distributions of its loricariid fauna.

Materials and Methods

Institutional abbreviations are as in Leviton et al. (1985) with the addition of UG/CSBD for the University of Guyana, Center for the Study of Biological Diversity. Measurements were made with digital calipers to the nearest 0.1 mm. Measurements and counts of bilaterally symmetrical features were from the left side of the body when possible; if a feature was damaged on the left side, it was examined on the right side. Measurements followed Boeseman (1968) as modified by Armbruster and Page (1996), Armbruster and Hardman (1999), and as follows. Interdorsal length was measured from the posterior insertion of the dorsal fin to the anterior margin of the postdorsal ridge. Postdorsal ridge–caudal length was measured from the anterior margin of the postdorsal ridge to the posterior margin of the second-to-last procurrent caudal fin spine. Five distances were measured accordingly: dorsal–pectoral (dorsal fin origin to pectoral fin origin), dorsal–pelvic (dorsal fin origin to pelvic fin origin), pelvic–dorsal (pelvic fin origin to posterior in-
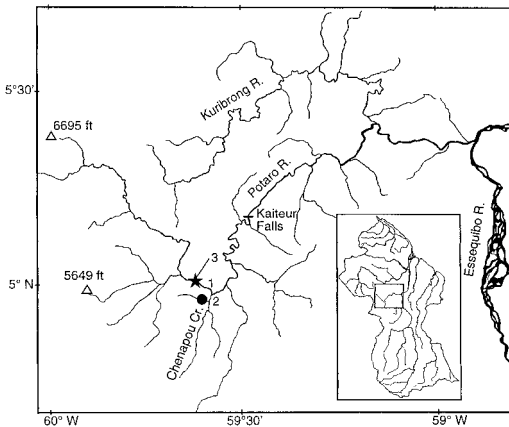
Fig. 1. Known distribution of *Corymbophanes*. Star = type locality of *Corymbophanes andersoni* (Chenapou Falls); circle = type locality of *Corymbophanes kaiei* new species (Oung Creek); 1 = Amerindian village of Chenapou; 2 = Holmia, trading camp (now abandoned) of the Essequibo Exploration Company (Eigenmann 1909, 1912).

sertion of dorsal fin), dorsal–anal fin (dorsal fin origin to anal fin origin), and anal fin–postdorsal ridge (anal fin origin to anterior margin of postdorsal ridge).

Lateral line plates were counted as the plates bearing the lateral line canal from the pterotic-supracleithrum to, but not including, the horizontally elongate plate covering insertion of the middle caudal fin rays. Plates in the dorsalmost lateral row were separated into predorsal plates (counted from posterior edge of the supraoccipital to, and including, nuchal plate), dorsal fin plates (counted along base of dorsal fin), interdorsal plates (counted between posterior insertion of dorsal fin and anterior margin of the first median unpaired plate of postdorsal ridge), and postdorsal ridge–caudal plates (count began with plate just below the first median unpaired plate and included elongate plate covering base of dorsal caudal fin rays). Postdorsal ridge plate counts included all of the raised median plates posterior to the dorsal fin and all dorsal procurrent caudal fin spines (it was not possible to determine externally where the median unpaired plates finished and the procurrent caudal fin spines began). Postanal fin plate counts included the plates in the ventralmost row beginning with the plate just posterior to insertion of last anal fin ray to, and including, the elongate plate covering base of ventral caudal fin rays. Adpressed pectoral fin plate counts included the lateral plates surpassed by the pectoral fin spine when adducted parallel to body axis. Adpressed pelvic fin plate counts included the ventrolateral plates surpassed by adducted pelvic fin spine. The dorsal fin spinelet and first unbranched anal fin ray were counted as spines. Lateral plate rows on the caudal peduncle were counted at the shallowest part of the caudal peduncle and excluded the median unpaired plates of the postdorsal ridge.

Corymbophanes Eigenmann 1909

Type species.—*Corymbophanes andersoni* Eigenmann, 1909, by original designation.

Diagnosis.—*Corymbophanes* is readily distinguished from all other loricariids by the unique combination of the presence of a low elongate postdorsal ridge formed by 13–17 raised median unpaired plates, absence of the adipose fin, and absence of the dorsal flap (diverticulum sensu Schaefer, 1997) of the iris.

In addition to the characteristics above, the following are considered to be synapomorphies for *Corymbophanes* within Loricariidae: bladelike ventral surface of the first epibranchial, elongate anterior process on fourth epibranchial, preoperculo-hyomandibula ridge deflected beyond the posterior margin of the hyomandibula such that it is visible when the suspensorium is viewed mesially, spoon-shaped anterior process of the metapterygoid, bony contact of the canal plate with the suspensorium, and suprapreopercle absent. All of these characteristics are found elsewhere in Loricariidae but appear to be independently derived in *Corymbophanes* based on the phylogeny in Armbruster (1997). The absence of the dorsal flap of iris may not be a synapomorphy for *Corymbophanes* if *Corymbophanes* is related to the *Rhinelepis* group of Armbruster (1998a,b; see Discussion).

Description.—*Corymbophanes* (Figs. 2–3) includes two medium-sized species of loricariid (largest specimen 70.0 mm SL). Coloration dark brown to black with white to cream-colored markings. Head wide, moderately depressed; dorsal profile gently rounded (convex). Anterior margin of snout semicircular. Body widest at or just posterior to pectoral fin origin and gradually tapering to compressed caudal peduncle; moderately depressed anteriorly, deepest at or just anterior to dorsal fin origin. Caudal peduncle relatively deep, moderately to strongly compressed, wedge-shaped in cross-section. Ventral surfaces of head, midbody, and caudal peduncle flat.

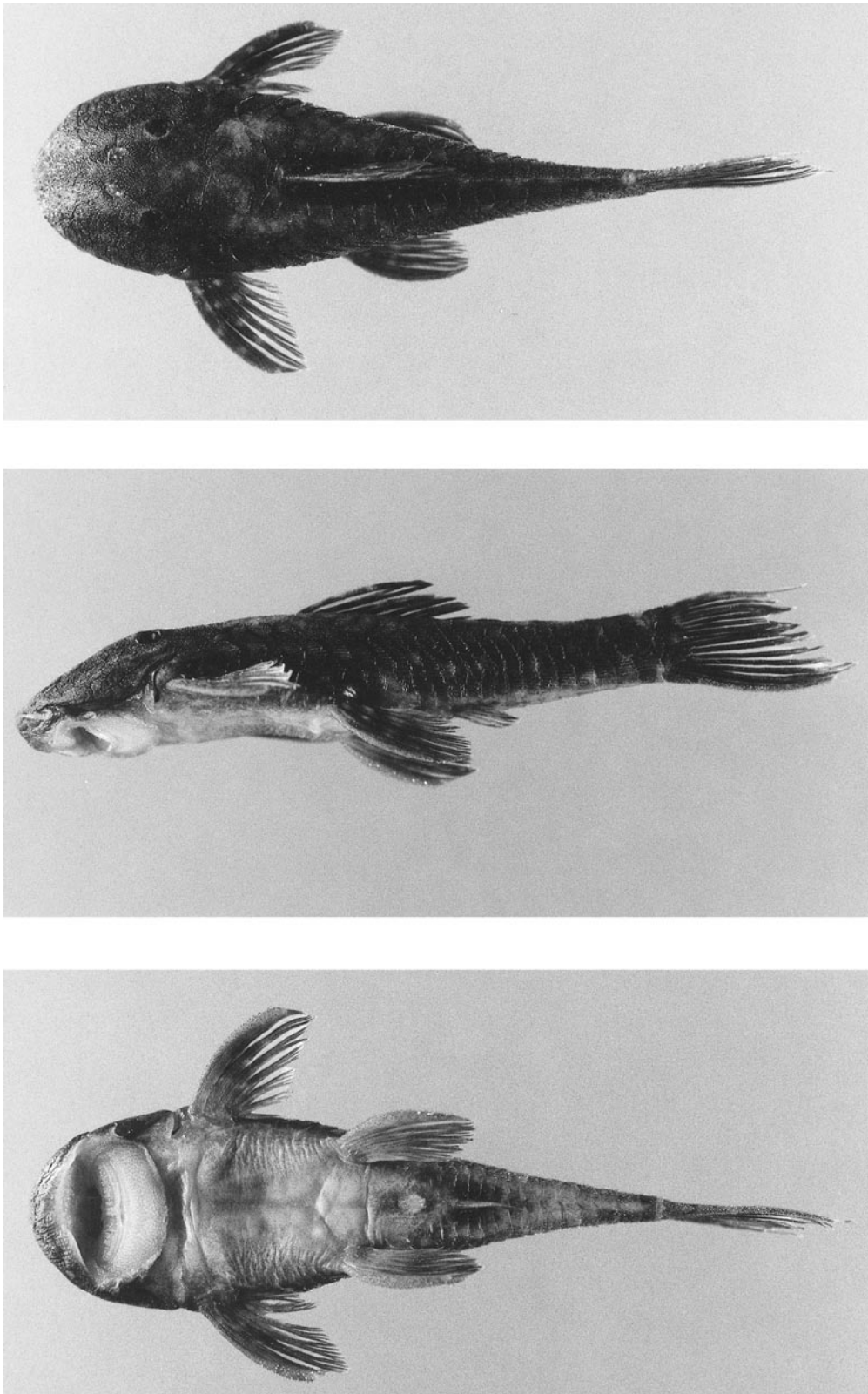Dorsal fin short, depressed tip either not reaching or slightly contacting postdorsal ridge.

Fig. 2.   *Corymbophanes andersoni*, AUM 28149, 64.9 mm SL. Photos by JWA.
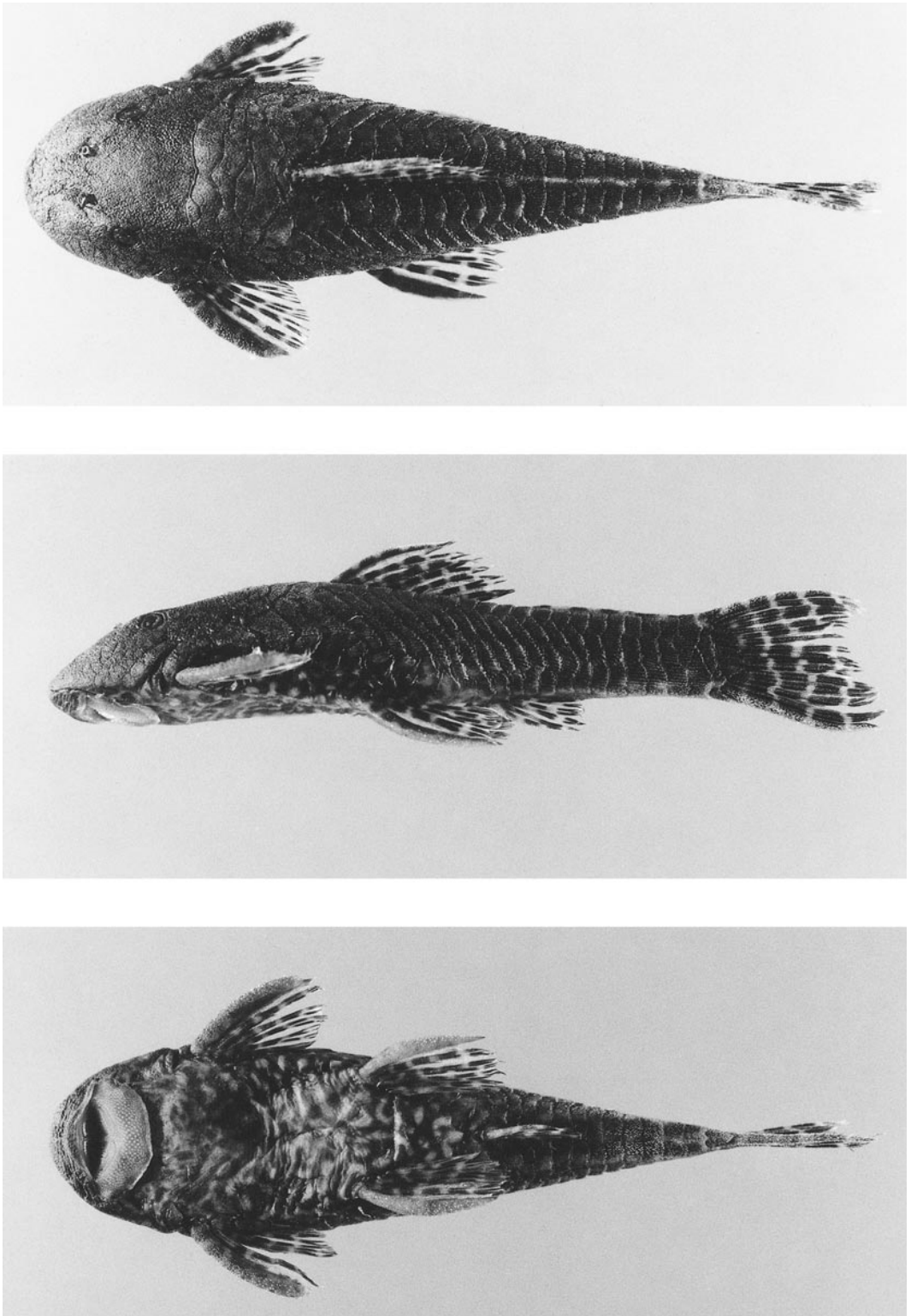
Fig. 3.   Paratype of *Corymbophanes kaiei* new species, INHS 49583, 70.0 mm SL. Photos by JWA.

Dorsal fin spinelet V-shaped, dorsal fin spine lock functional. Adipose fin absent; replaced by low elongate postdorsal ridge formed by series of raised median unpaired plates contiguous with dorsal procurrent caudal fin spines. Pectoral fin origin situated more dorsally than pelvic fin origin. Pectoral fin spines short to moderately long; when adpressed, tip is either even with or short of pelvic fin origin. Anterior pectoral fin rays longer than pectoral fin spine. Pelvic fin spines about as long as pectoral fin spines or longer; adpressed tip reaches to or slightly beyond origin of anal fin. Caudal fin short, posterior edge straight to slightly emarginate, lower lobe longer than upper. Dorsal fin II,7; pectoral fin I,6; pelvic fin I,5; anal fin I,4 or I,5 (see species descriptions); caudal fin I,14,I.

Eyes relatively small, orbit diameter 11.5–17.9% of head length. Dorsal margin of orbit formed by frontal. Anterior margin of orbit slightly raised, forming a low rounded ridge that continues to anterolateral margin of nares. Mouth wide; roof with small, median buccal papilla. Oral disk (lips) prominent, strongly papillose; posterior margin largely entire. Maxillary barbel short, tip separate from lower lip. Teeth numerous, villiform, bicuspid with lateral cusp shorter than medial cusp.

Lateral line plates 23–26; predorsal plates 4–6; dorsal fin plates 6–8; interdorsal plates 1–4; postdorsal ridge–caudal plates 10–12; postdorsal ridge plates 13–17; postanal fin plates 10–12; adpressed pectoral fin plates 3–5; adpressed pelvic fin plates 7–10; three rows of plates on caudal peduncle (excluding median dorsal row). Lateral plates not keeled. Canal plate small, oval, not deflected ventrally. Plates absent on breast, abdomen, and pelvic region anterior to anus. Small plateless area between pterotic-supracleithrum and first lateral line plate.

Small, sharply pointed odontodes present on lateral plates. Odontodes usually arranged in several discrete longitudinal rows on each lateral plate (posteriormost 1–2 odontodes in each row usually slightly enlarged). Small pointed odontodes also present on some head bones (frontal, opercle, preopercle, sphenotic, nasal, infraorbitals, pterotic-supracleithrum, and supraoccipital), fin rays, and portions of fin spines. Odontodes usually become slightly enlarged and rounded on ventral portions of paired fin spines. Odontodes absent from ventral portion of plates surrounding base of anal fin. Sexual dimorphism for development of odontodes not observed.

Comparisons.—Among loricariids, only two other genera (*Leptoancistrus* Meek and Hildebrand

and *Lipopterichthys* Norman) and one species (*Hemipsilichthys vestigipinnis* Pereira and Reis) have a postdorsal ridge formed by median unpaired plates and lack an adipose fin. *Leptoancistrus* and *Lipopterichthys* can be distinguished from *Corymbophanes* by the presence of the dorsal flap of iris. Furthermore, *Leptoancistrus* and *Lipopterichthys* have evertible cheek plates and hypertrophied odontodes (absent in *Corymbophanes*), five rows of plates on the caudal peduncle (vs three), and lack an anal fin. *Hemipsilichthys vestigipinnis* has a postdorsal ridge that is relatively short and formed by only 2–3 median plates (scutelets sensu Pereira and Reis, 1992) versus 13–17 in *Corymbophanes*. Other species of *Hemipsilichthys* may have a postdorsal ridge but always retain an adipose fin (E. Pereira, pers. comm.). Most species of *Hemipsilichthys* also have hypertrophied odontodes along the head margin (absent in *Corymbophanes*; Pereira and Reis, 1992; Armbruster, 1997). Two other loricariid genera, *Delturus* Eigenmann and Eigenmann and *Upsilodus* Miranda-Ribeiro, have a postdorsal ridge of median unpaired plates but retain a distinct adipose fin (adipose fin membrane present; Armbruster, 1997).

KEY TO SPECIES OF *CORYMBOPHANES*

1a. Four branched anal fin rays; five plates below adpressed pectoral fin spine; no light bands on caudal fin; abdomen lightly colored, no vermiculations in adults (Fig. 2) . . *C. andersoni*
1b. Five branched anal fin rays; three to four plates below adpressed pectoral fin spine; alternating light and dark bands on caudal fin; abdomen darkly colored, with light vermiculations in adults (Fig. 3) . . . . *C. kaiei*

Corymbophanes andersoni Eigenmann 1909
Figure 2

Holotype.—FMNH 52675 (65.5 mm SL); Aruataima Falls, Upper Potaro, British Guiana [Guyana, Potaro-Siparuni Region, Potaro River (Essequibo River Drainage) at Chenapou Falls, 23.7 km southwest of Mende's Landing (Kaieteur Falls), 05°00′05″N, 59°37′33″W]; W. Grant, 1908–09.

Topotypes.—AUM 28149 (3, 1 cleared and stained, 25.6–57.0 mm SL), INHS 49568 (2, 17.3 and 64.9 mm SL); L. M. Page, J. W. Armbruster, M. Hardman, J. H. Knouft, and W. S. Prince, 31 October 1998.

Diagnosis.—*Corymbophanes andersoni* is distinguished from *C. kaiei* by having the abdomen lightly colored (vs dark with light vermicula-

tions), caudal fin without light bands, anal fin I,4 (vs I,5), caudal peduncle strongly (vs moderately) compressed and five (vs 3–4) plates below adpressed pectoral fin spine. In addition, the following combination of osteological features serve to diagnose *C. andersoni*: presence of an enlarged rib of the sixth vertebral centrum that is greatly widened at its tip, the mesethmoid forming a shelf anterior to mesethmoid disk, and a tall levator arcus palatini crest on the hyomandibula. These characteristics are found in other loricariids, but appear to be separately evolved in *C. andersoni* given the phylogeny in Armbruster (1997).

Morphometrically, *C. andersoni* is further distinguished from *C. kaiei* by having a relatively longer head (33.9–35.2% SL vs 30.7–33.2 in *C. kaiei*); longer snout–pectoral length (28.1–29.4% SL vs 23.1–27.1); longer (20.7–22.8% SL vs 15.6–17.8) and wider (21.6–25.8% SL vs 18.7–20.5) mouth; shorter internares width (3.5–3.9% SL vs 4.6–5.2); shorter interorbital width (11.3–12.2% SL vs 13.6–15.5); shorter thorax (21–24.1% SL vs 25.0–26.7); shorter anal fin (10.0–12.2% SL vs 13.0–15.6); shorter dorsal–pectoral distance (24.2–25.7% SL vs 26.0–29.6); and shorter postdorsal ridge–anal fin distance (12.6–14.4% SL vs 14.6–15.9). *Corymbophanes andersoni* also has a relatively smaller orbit (11.5–15.4% head length vs 16.6–17.9 in *C. kaiei*) and longer snout (64.6–69.1% head length vs 58.1–61.4).

Description.—Dorsal surface and sides of head and body dark brown to black with large irregularly spaced white spots (most spots equal to or larger than eye size). Ventral surface between oral disc and anal fin origin white medially, becoming dusky with scattered chromatophores laterally and around anus. Ventral surface of caudal peduncle mostly light-colored becoming dusky around anal fin base. Fin spines and rays brown. Fin membranes mostly clear with dark pigment along fin spines and rays (especially in paired fins). Spines and rays of dorsal and paired fins occasionally with a few light spots. Juveniles with relatively larger white spots on body; abdomen almost entirely white.

See Table 1 for morphometrics. Teeth 62–77 per dentary (average = 68; n = 6 dentaries, three individuals), and 56–72 per premaxilla (average = 65; n = 6 premaxillae, three individuals). The smallest individual examined (17.3 mm SL) is incompletely plated; body plates most developed anteriorly and along base of caudal fin, least developed or absent in midlateral portion of posterior flank.

Range and habitat.—All known specimens of *C. andersoni* are from Chenapou (formerly Aruataima) Falls, a large cataract on the Upper Potaro River in the Pakaraima Mountains of west-central Guyana (Fig. 1). Most individuals collected in this study were taken from a shallow riffle in the main channel. The substrate was largely black bedrock with numerous crevices and small patches of gravel and cobble. One specimen was collected in a gravel and cobble riffle in a side channel of the cataract. *Corymbophanes andersoni* apparently does not occur below Kaieteur Falls despite the abundance of suitable habitat in the Lower Potaro (Eigenmann 1912; pers. obs.).

Corymbophanes kaiei Armbruster and Sabaj, new species
Figure 3

Holotype.—UG/CSBD F644 (65.6 mm SL); Guyana, Potaro-Siparuni Region, Oung Creek (Chenapou River–Potaro River Drainage), about one hour hike southwest of coordinates 04°58′26″N, 59°34′41″W (mouth of Chenapou River); L. M. Page, J. W. Armbruster, M. Hardman, J. H. Knouft, and W. S. Prince, 1 November 1998.

Paratypes.—AUM 28163 (2, 1 cleared and stained, 48.3 and 48.5 mm SL), INHS 49583 (2, 26.2 and 70.0 mm SL), FMNH 108246 (1, 47.6 mm SL); collection data same as holotype.

Diagnosis.—*Corymbophanes kaiei* is distinguished from *C. andersoni* by having the abdomen dark brown with white vermiculations (vs mostly white) in adults, light bands on the caudal fin, anal fin I,5 (vs I,4), moderately (vs strongly) compressed caudal peduncle, and 3–4 plates (vs 5) below the adpressed pectoral fin spine. See diagnosis of *C. andersoni* for morphometric differences. *Corymbophanes kaiei* is not diagnosed by any derived osteological characteristics.

Description.—Dorsal surface and sides of head and body dark brown to black with small white to cream-colored spots (most spots smaller than eye size). Light spots smallest and most tightly spaced on head, becoming slightly larger and more irregularly spaced toward caudal peduncle; combining to form bars and/or vermiculations in some larger specimens. Ventral surface brown with distinct white vermiculations (light and dark areas in more or less equal proportions). Fin spines and rays with alternating brown and white to cream-colored bands; light bands generally narrower than intervening dark

TABLE 1.   SELECTED MORPHOMETRIC FEATURES OF *Corymbophanes andersoni* AND *C. kaiei*.

Morphometric feature	C. andersoni (n = 4)			C. kaii (n = 5)		
	Holotype	Mean ± SD	Range	Holotype	Mean ± SD	Range
Standard length (mm)	65.5	58.4 ± 9.1	46.1–65.5	65.6	56.0 ± 10.9	47.6–70.0
% Standard length						
Predorsal length	43.1	43.5 ± 1.1	42.3–44.8	43.4	43.8 ± 0.4	43.4–44.4
Head length	34.0	34.3 ± 0.6	33.9–35.2	30.7	32.2 ± 1.3	30.7–33.2
Internares width	15.9	3.7 ± 0.2	3.5–3.9	14.0	4.9 ± 0.2	4.6–5.2
Interorbital width	11.3	11.7 ± 0.4	11.3–12.2	13.8	14.2 ± 0.8	13.6–15.5
Snout-pectoral length	28.1	28.9 ± 0.6	28.1–29.4	23.1	25.1 ± 1.9	23.1–27.1
Thorax length	21.0	22.5 ± 1.5	21–24.1	25.1	25.6 ± 0.7	25.0–26.7
Pectoral spine length	23.8	23.0 ± 1.0	21.5–23.8	21.4	22.6 ± 1.7	20.5–24.3
Abdomen length	21.5	20.8 ± 0.5	20.3–21.5	22.7	21.9 ± 0.7	20.9–22.7
Pelvic spine length	23.7	23.9 ± 1.9	21.4–25.9	25.8	24.4 ± 2.1	21.9–26.6
Postanal length	32.1	30.1 ± 1.6	28.2–32.1	27.7	27.8 ± 1.2	26.1–29.6
Anal fin length	12.0	11.4 ± 1.0	10.0–12.2	15.6	14.5 ± 1.1	13.0–15.6
Caudal peduncle depth	11.0	11.2 ± 0.9	10.0–12.2	11.7	12.2 ± 0.3	11.7–12.4
Postdorsal ridge-caudal length	28.8	28.5 ± 0.7	27.5–29.2	28.5	8.5 ± 0.9	27.2–29.5
Interdorsal length	7.2	8.3 ± 1.9	6.7–10.9	8.6	9.0 ± 0.7	8.2–9.8
Base of dorsal length	19.5	20.5 ± 1.4	19.3–22.1	18.9	18.7 ± 0.6	17.7–19.3
Dorsal spine length	24.0	23.2 ± 0.7	22.5–24.0	22.9	23.1 ± 1.3	21.0–24.4
Head depth	16.2	16.7 ± 1.2	15.7–18.5	17.6	17.9 ± 0.4	17.4–18.4
Dorsal-pectoral length	25.4	25.0 ± 0.7	24.2–25.7	28.7	28.1 ± 1.3	26.0–29.6
Dorsal-pelvic length	18.6	18.6 ± 1.5	16.6–19.8	19.1	18.9 ± 0.9	17.8–20.2
Pelvic-dorsal length	21.3	21.2 ± 1.2	20.0–22.8	21.9	21.5 ± 1.4	19.2–22.5
Dorsal-anal fin length	15.1	14.0 ± 1.1	12.8–15.1	17.6	16.1 ± 1.1	14.5–17.6
Anal fin-postdorsal ridge length	13.3	13.6 ± 0.8	12.6–14.4	14.6	15.1 ± 0.5	14.6–15.9
Anal fin width	14.0	13.6 ± 1.1	12.5–15.0	16.7	15.4 ± 1.1	13.9–16.7
Cleithral width	27.4	28.1 ± 2.0	25.8–30.5	27.2	27.2 ± 1.0	26.0–28.8
Mouth width	21.6	23.1 ± 1.9	21.6–25.8	18.7	19.4 ± 0.7	18.7–20.5
Mouth length	20.7	21.4 ± 1.0	20.7–22.8	15.6	17.1 ± 1.0	15.6–17.8
% Head length						
Orbit diameter	11.5	12.9 ± 1.8	11.5–15.4	17.3	17.3 ± 0.5	16.6–17.9
Snout length	64.6	66.6 ± 1.9	64.6–69.1	60.9	60.9 ± 1.3	58.1–61.4

bands, and in caudal fin loosely aligned to form four to five irregular vertical bands across entire fin. Dorsal and caudal fin membranes dusky; pigment particularly concentrated along fin spines and rays but lacking in portions between adjacent light bands on fin spines and rays. Paired and anal fin membranes clear or with dark pigment concentrated along fin spines and rays. Juveniles more uniformly colored; appear medium to dark brown overall except for faint light spots on head, faint light bands on caudal fin, and lightly pigmented abdomen; sides of body slightly darker midlaterally, forming broad dark brown stripe.

See Table 1 for morphometrics. Teeth 44–65 per dentary (average = 57; n = 10 dentaries, five individuals), and 46–68 per premaxilla (average = 57; n = 10 premaxillae, five individuals).

Range and habitat.—*Corymbophanes kaiei* is known only from the type locality, Oung Creek, a tributary of the Chenapou River (Upper Potaro Drainage) in west-central Guyana (Fig. 1). On maps in Eigenmann (1912) Chenapou is misspelled Chenapowu, and Oung Creek is labeled Wong River. Oung Creek is a small, clear, upland creek well shaded by riparian forest. Specimens of *C. kaiei* were collected among cobble and submerged logs in sun-lit areas of swift riffles.

Etymology.—The species is named for Kaie, a character from Amerindian legend for whom Kaieteur Falls was named. Although modern accounts vary, most describe Kaie as a great chieftain who committed self-sacrifice by canoeing himself over the falls to save his war-stricken tribe. A strong departure from this interpreta-

tion is one by W. H. Brett (1816–1886), an anglican missionary who lived among the Amerindians of the Essequibo for 40 years. In Brett's (1931) account, the legend describes Kaie as a burdensome old man who was placed in a canoe with all his goods and sent over the falls by his fellow tribesmen. Before impact, a good spirit transformed the old man, his canoe, and goods into the large rocks that occur at the bottom of the falls. Like Kaie, it appears that *Corymbophanes* has never been successful at traversing the falls.

DISCUSSION

Phylogenetic relationships.—Hypotheses on the relationship of *Corymbophanes* to other loricariids have been speculative because, until recently, the genus was known only from the holotype. In his brief generic description, Eigenmann (1909:5) noted that *Corymbophanes* is "allied to *Rhinelepis.*" *Rhinelepis* Agassiz is in Hypostominae (Armbruster, 1998a), one of six subfamilies traditionally recognized in Loricariidae (Isbrücker, 1980). *Rhinelepis* together with *Pseudorinelepis* Bleeker, *Pogonopoma* Regan, and *Pogonopomoides* Gosline form the monophyletic *Rhinelepis* group of Armbruster (1998a,b) based on several synapomorphies including a U-shaped diverticulum of the esophagus, a lateral shelf on the upper pharyngeal tooth plate, absence of ribs posterior to the enlarged rib of the sixth vertebral centrum, an exposed portion of the coracoid strut that supports odontodes, widened anterolateral processes of the pelvic girdle, and absence of the dorsal flap of the iris. Of these characteristics, *Corymbophanes* shares only the absence of the dorsal flap of the iris. Until a phylogenetic analysis of Hypostominae can be performed, the relationship of *Corymbophanes* to the *Rhinelepis* group must remain speculative.

Eigenmann (1912:103) also commented on *Corymbophanes* in his biogeographical analysis of the Potaro River and Guyana Plateau. He remarked that *Corymbophanes* looked very similar to the widely distributed *Plecostomus* (*Hypostomus* Lacépède) and "may therefore be a local modification of a comparatively recent immigrant to the [Guyana] plateau." A close relationship of *Corymbophanes* to *Hypostomus* is unlikely based on the phylogenetic analyses of Loricariidae by Schaefer (1986, 1987) and Armbruster (1997). Their analyses grouped *Hypostomus* and several other hypostomine genera (*Aphanotorulus* Isbrücker and Nijssen, *Cochliodon* Heckel, *Isorineloricaria* Isbrücker, and *Pterygoplichthys* Gill sensu Isbrücker, 1980) with the subfamily Ancistrinae

in a large well-supported clade (about 335 species in 26 genera sensu Armbruster, 1997). Their analyses also noted that the subfamilial rank of Ancistrinae rendered Hypostominae paraphyletic. Characteristics supporting this large clade (Ancistrinae + Hypostominae, in part) include hyomandibula with a projection toward or a suture with the quadrate mesially in area of cartilage window between the two bones, anterior process of the pterotic-supracleithrum for origin of the dilatator operculi separated mesially from main body of the pterotic-supracleithrum (vs on the same plane as the pterotic-supracleithrum), and anteriorly directed projection laterally on eighth vertebra long and pointed, passing between the dorsal and ventral rami of the rib of sixth vertebral centrum (vs processes short and broad and not contacting the rib of the sixth vertebral centrum; Armbruster, 1997). Neither *Corymbophanes* nor members of the *Rhinelepis* group exhibit these character states, suggesting that both taxa occupy a basal position among the clade of all Hypostominae + Ancistrinae. Therefore, *Corymbophanes* likely represents a relatively old lineage rather than a recently derived one.

Ecological and biogeographical implications.—Although sample sizes are small, Eigenmann (1912) and this study suggest that *C. andersoni* and *C. kaiei* occupy different habitats, large river and small creek, respectively. The more dorsoventrally flattened shape and strongly compressed caudal peduncle of *C. andersoni* may represent morphological adaptations to the higher flow rates characteristic of Chenapou Falls (a large-river cataract) versus the much smaller, slower riffles of Oung Creek.

Available data suggest that *Corymbophanes* is endemic to the Upper Potaro River Basin above Kaieteur Falls. Large cataracts suitable to *C. andersoni* are common in the Lower Potaro below the falls; however, extensive sampling of these habitats by Eigenmann (1912) and during the current study did not reveal its presence. Likewise, *C. kaiei* was not found in small tributaries to the Lower Potaro River. *Corymbophanes* has not been recorded from the other major river systems draining the eastern Guyana Plateau, namely the Cuyuni-Mazaruni Rivers (Essequibo River Drainage), Río Caroni (Orinoco River Drainage) and Rio Branco (Amazon River Drainage; Lowe-McConnell, 1964; Lasso et al., 1990).

Only one or two other loricariids are known from the Upper Potaro River. *Hypostomus hemiurus* (Eigenmann) occurs in the Potaro River both above and below Kaieteur Falls. *Lithogenes*

villosus Eigenmann, like *C. andersoni*, is known only from Chenapou Falls in the Upper Potaro. *Lithogenes* is alternately considered the basalmost member of Loricariidae (Isbrücker, 1980; Schaefer, 1987) or a species of Astroblepidae (Nijssen and Isbrücker, 1986; Nelson, 1994), the sister family to Loricariidae. Although *Lithogenes* is not found in the Lower Potaro, undescribed species of *Lithogenes* (or related taxa) are known from outside the Potaro River System (see de Pinna, 1998).

No loricariids of the subfamily Ancistrinae are known from the Upper Potaro River. Ancistrinae is a large monophyletic group (over 200 species in 25 genera sensu Armbruster, 1997) that is widely distributed throughout Panama and South America. Ancistrines are often common in upland lotic habitats and some superficially resemble *Corymbophanes*. Several ancistrines (*Ancistrus* Kner, *Hemiancistrus* Bleeker, *Lithoxus* Eigenmann, *Pseudancistrus* Bleeker) occur in the lower Potaro and Essequibo rivers, and a variety (*Ancistrus, Chaetostoma, Exastilithoxus* Isbrücker and Nijssen, *Hemiancistrus, Lasiancistrus* Regan, *Peckoltia* Miranda-Ribeiro, and *Pseudancistrus*) occur in one or more of the three major systems draining the eastern Guyana Plateau (i.e., Cuyuni-Mazaruni Rivers, Río Caroni, and Rio Branco; Eigenmann, 1912; Lasso et al., 1990; pers. obs.). Several stream captures are hypothesized for the hydrogeographic history of this region (Lasso et al., 1990) and presumably facilitated the dispersal of ancistrines among these drainages.

Eigenmann (1912) speculated that the fish fauna of the Upper Potaro River is largely composed of recently acquired species but may include relicts of the original fauna of the Guyana Plateau. Eigenmann (1912: 104) cited *Lithogenes villosus* as a potential "left-over" because of its putative endemism to the Upper Potaro and evidently "long separation from the other Loricariidae." Because of its basal position among the Hypostominae + Ancistrinae clade and its apparent endemism, *Corymbophanes* also appears to have a relictual distribution. The relative isolation of *Corymbophanes* may be attributable to the Upper Potaro's limited faunal exchange with neighboring basins via stream capture and the effectiveness of Kaieteur Falls as a barrier to upstream colonization by other loricariids.

Acknowledgments

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