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Article

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Two new species of the Glyptosternine catfish genus *Euchiloglanis* (Teleostei: Sisoridae) from southwest China with redescriptions of *E. davidi* and *E. kishinouyei*

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Abstract

Two new species of the sisorid catfish genus *Euchiloglanis* are described from the upper Yangtze River and the upper Black River drainage (Red River basin) in China. *Euchiloglanis longibarbatus* **n. sp.** from the upper Yangtze River differs from *E. davidi*, *E. kishinouyei* and *E. longus* **n. sp.** by having an elongate and threadlike maxillary barbel with a pointed tip reaching posteriorly to beyond the gill opening. It differs from *E. dorsoarcus* by having the anal-fin origin closer to the caudal-fin base than to the pelvic-fin origin, and from *E. phongthoensis* by having the anus located midway between the pelvic-fin insertion and the anal-fin origin. *Euchiloglanis longus* **n. sp.** from the upper Black River drainage differs from *E. davidi* by having the length of the pectoral fin equal to 78.4–89.5% of the distance between the origins of the pectoral and pelvic fins, and from *E. kishinouyei* and *E. longibarbatus* **n. sp.** by having the distance between the origins of the pelvic and anal fins equal to 108.9–140.6% of the distance between the origins of the pectoral and pelvic fins. It further differs from *E. davidi*, *E. kishinouyei*, and *E. longibarbatus* **n. sp.** by having the depth of the caudal peduncle equal to 14.1–27.0% of the length of the caudal peduncle. It differs from *E. dorsoarcus* by having the anal-fin origin closer to the caudal-fin base than to the pelvic-fin origin, and from *E. phongthoensis* by having the distance from the adipose-fin origin to the dorsal-fin insertion equal to about 50% of the adipose-fin base length. *Euchiloglanis davidi* and *E. kishinouyei* are redescribed from recently collected specimens from their type localities. A lectotype is designated for *E. davidi* and a neotype designated for *E. kishinouyei*. *Euchiloglanis kishinouyei* is distinguished from *E. davidi* by lacking an indentation in the premaxillary tooth band, by having the length of the pectoral fin equal to 75.5–89.6% of the distance between the insertions of the pectoral and pelvic fins, and by having the distance between the insertion of the pelvic-fin and the anus equal to 81.5–97.5% of the distance between the insertions of the pectoral and pelvic fins. A key to the species of is *Euchiloglanis* also provided.

Key words: *Euchiloglanis*, new species, Sisoridae, catfish

Introduction

The sisorid catfish genus *Euchiloglanis* was erected by Regan (1907) as a replacement name for the genus name *Chimarrichthys* Sauvage. *Chimarrichthys* was erroneously thought to be preoccupied by Regan, but *Euchiloglanis* has been treated as valid following prevailing usage (Ferraris, 2007). The type species, *Chimarrichthys davidi* Sauvage, is based on seven type specimens collected from Yao-Tchy, Tibet, China (now Yaoji, Baoxing County, Sichuan, China). For a long time, *Euchiloglanis* was primarily distinguished from *Glyptosternon* by the premaxillary tooth band not extending posteriorly and the gill opening not extending to the abdomen (Hora, 1923; Norman, 1925; Hora and Silas, 1952). However, according to Chu (1981), the premaxillary tooth bands on all seven type specimens of *Chimarrhiththys davidi* extend posteriorly on both sides. Therefore, Chu (1981) restricted *Euchiloglanis* to include only species with premaxillary tooth bands that extend posteriorly. The remaining species, with premaxillary tooth bands not extending posteriorly, were placed in the genus *Pareuchiloglanis*.

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Chu (1981) recognized two species of *Euchiloglanis*, *E. davidi* (Sauvage, 1874) and *E. kishinouyei* Kimura (1934), found in the upper Yangtze River in China. Two other species, *E. dorsoarcus* Nguyen and *E. phongthoensis* Nguyen, have recently been described from the Black River (called Song Da in Vietnamese) (Nguyen, 2005), a tributary of the Red River (Song Hong in Vietnamese, or Hong He in Chinese) in Vietnam.

After comparing sequences of mitochondrial 16s rRNA between *E. davidi* and *E. kishinouyei*, Guo *et al.* (2004a) concluded that there was no significant variation between them and suggested that these two species were conspecific, making *E. kishinouyei* a junior synonym of *E. davidi*.

During the identification of specimens of *Euchiloglanis* from the Lixian-Jiang (upper Black River drainage) in Yunnan, China, and the Yalong-Jiang (upper Yangtze River basin) in Sichuan, China, we found two forms that are distinct from the four nominal species. These two new species are described here as *Euchiloglanis longibarbatus* and *E. longus*, based on morphological features. Additionally, we found *E. kishinouyei* to be distinct from *E. davidi*, and redescribe these two species here.

Material and methods

Morphometric measurements followed Ng & Kottelat (1998, 1999) and Ng (2004), except body depth was measured at the origin of the dorsal fin, not at the anus. Additionally, the distance from the pectoral-fin origin to the pelvic-fin origin (Pt-Pl), and the distance from the pelvic-fin origin to the anus (Pl-A) were measured. Measurements were made point to point with digital calipers, and data were recorded to nearest 0.1 mm. Counts and measurements were made on the left side of specimens when possible. Subunits of the head were presented as proportions of head length (HL). Head length and measurements of the body were given as proportions of standard length (SL). Information on specimens was given as follows: catalog number, number of examined specimens (ex.), total length (TL), standard length (SL), collection locality, and river drainage. Other abbreviations used herein were: Co., county; Prov., province. Suffixes "-He" or "-Jiang" mean river or stream in Chinese. All specimens are preserved in the Natural History Museum (BMNH), London; the Kunming Institute of Zoology (KIZ), Chinese Academy of Sciences, Kunming; the Muséum National d'Histoire Naturelle (MNHN), Paris; the Museum of Zoology, Southwest Forestry University (SWFC), Kunming and the Florida Museum of Natural History (UF), Gainesville. Data for *Euchiloglanis dorsoarcus* and *E. phongthoensis* is from Nguyen (2005).

Euchiloglanis davidi (Sauvage)

(Fig. 1, Fig. 2A, Fig. 3A)

Chimarrhiththys davidi: Sauvage, 1874: 332–333 (Yao-Tchy, Tibet, [=Yao-Ji, Baoxing County, Sichuan] China) [Qingyi-Jiang drainage]; Regan, 1905 (in part): 183 (Eastern Tibet).

Euchiloglanis davidi: Norman, 1925 (in part): 574 (Eastern Tibet); Hora & Silas, 1952 (in part): 17 (Eastern Tibet, Yunnan and Szechwan); Chu, 1979: 77 (Qingyi-Jiang, Sichuan) [Qingyi-Jiang drainage]; Chu, 1981: 26–27 (Baoxing, Sichuan) [Qingyi-Jiang drainage]; Ding, 1994 (in part): 484–486 (Baoxing and Yaan, Sichuan) [Qingyi-Jiang drainage], (Danba and Ermei, Sichuan) [Dadu-He drainage]; Chu & Mo, 1999: 160–162 (Baoxing, Sichuan) [Qingyi-Jiang drainage]; Guo *et al.*, 2004a (in part): 261 (Baoxing, Tianquan, and Yaan, Sichuan) [Qingyi-Jiang drainage], (Rangtang, Luding, and Maerkang, Sichuan) [Dadu-He drainage]; Guo *et al.*, 2004b (in part): 1588 (Baoxing, Sichuan) [Qingyi-Jiang drainage]; Guo *et al.*, 2005: 348 (Baoxing, Sichuan) [Qingyi-Jiang drainage]; Guo *et al.*, 2007 (in part): 58 (Baoxing and Yaan, Sichuan) [Qingyi-Jiang drainage], (Luding, Sichuan) [Dadu-He drainage].

Coraglanis kishinouyei: Wu & Chen, 1979 (in part): 293 (Banma, Qinhai) [Dadu-He drainage].

Euchiloglanis kishunouyei: Ding, 1994 (in part): 487–489 (Lushan and Yaan, Sichuan) [Qingyi-Jiang drainage], (Danba, Kangding, and Ermei, Sichuan) [Dadu-He drainage]; Guo *et al.*, 2004a (in part): 261 (Baoxing, Tianquan, and Yaan, Sichuan) [Qingyi-Jiang drainage], (Rangtang, Luding, and Maerkang, Sichuan) [Dadu-He drainage]; Guo *et al.*, 2004b (in part): 1588 (Tianquan, Sichuan) [Qingyi-Jiang drainage]; Peng *et al.*, 2004 (in part): 981 (Tianquan, Sichuan) [Qingyi-Jiang drainage]; Guo *et al.*, 2007 (in part): 58 (Tianquan, Sichuan) [Qingyi-Jiang drainage].

Exostoma davidi: Günther, 1896 (in part): 210 (River Ya [now Qingyi-Jiang]).

Glyptosternum davidi: Hora, 1923 (in part): 37 (Eastern Tibet and adjoining parts of China).

Material examined. All from Qingyi-Jiang: Lectotype: BMNH 1923.3.13.1, 1 ex. 117.5 mm SL, Yao-Tchy, Tibet, China, now Yao-Ji, 30°41' 53.55'' N, 102°44'48.34'' E, Baoxing Co., Sichuan Prov., China; Paralectotypes:

MNHN 0000-6273, 3 ex., and MNHN 0000-6274, 3 ex., same data a lectotype; KIZ 795578, 795580-81, 795585-87, 795590, 795594, 795596-97, 10 ex., 104.2–153.8 mm SL, Yanjing, 30°32’02.37’’ N, 102°54’46.82’’ E, 30.5 km from Yao-Ji in lower reaches of Qingyi-Jiang, Baoxing Co., Sichuan Prov., China; UF 177380, 2 ex., 75.4–78.3 mm SL and SWFC 200204013-24, 200204032-40, 200505004, 22 ex., 66.0–166.0 mm SL, Muping, 30° 22’ 39.96’ N, 102° 48’ 53.52” E, 37.1 km from Yao-Ji in lower reaches of the Qingyi-Jiang, Baoxing Co., Sichuan Prov., China; SWFC, 200204112-21, 10 ex., 75.0–155.0 mm SL, Chengxiang, 30°04’13.28’’N, 102°45’03.85’’ E, Tianquan Co., Sichuan Prov., China.

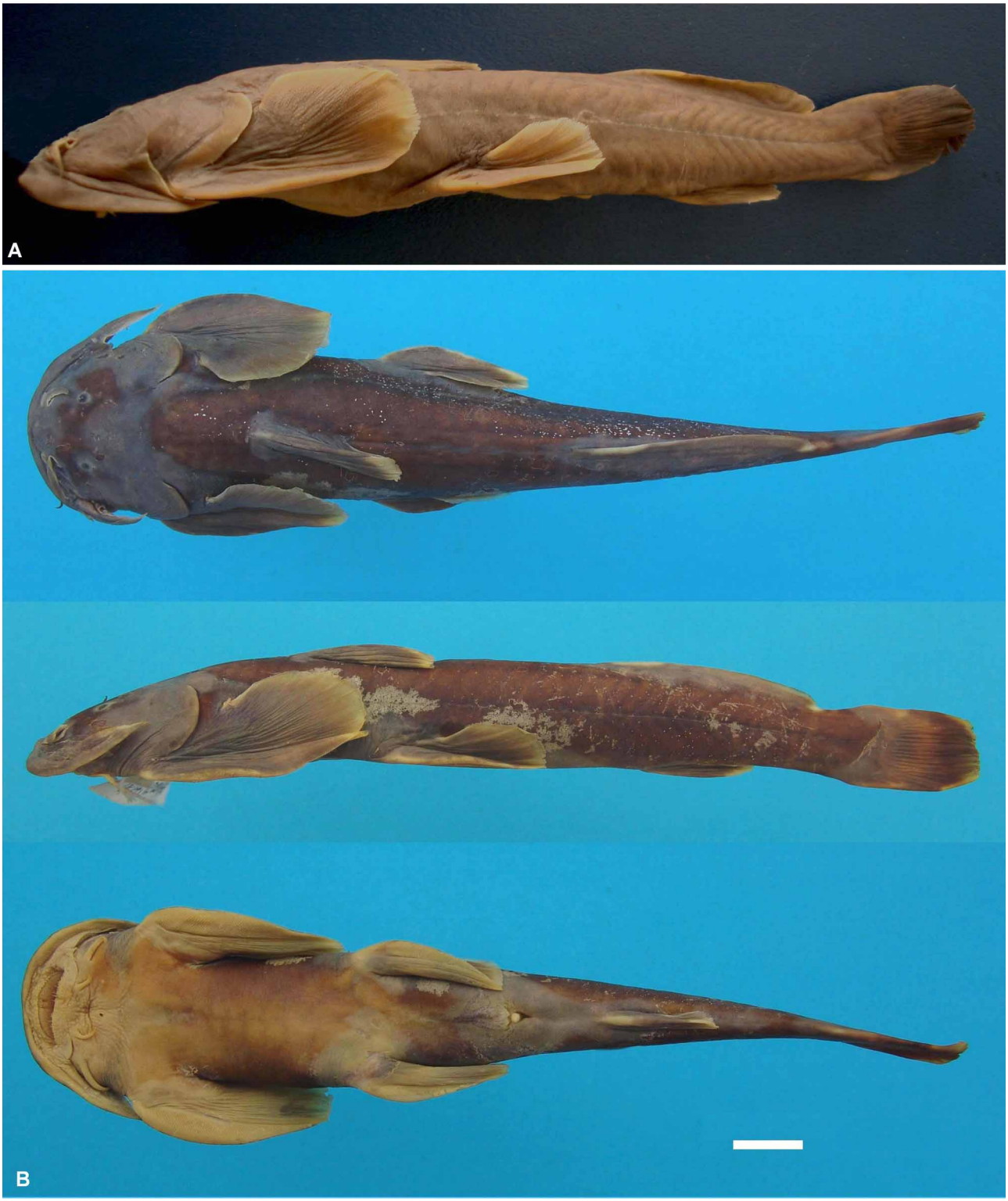

FIGURE 1. *Euchiloglanis davidi*, A, KIZ 795586, 153.8 mm SL; Yanjing, Baoxing Co., Sichuan Prov.; lateral view. B, SWFC 200204112, 155.0 mm SL; Muping, Baoxing Co., Sichuan Prov., China; dorsal, lateral and ventral views. Scale bar = 10 mm.

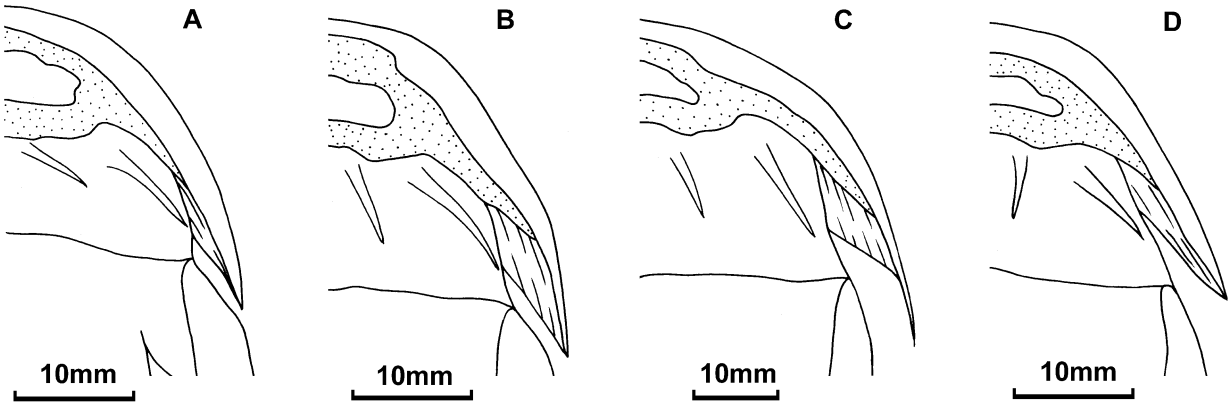

FIGURE 2. Ventral view of maxillary barbel. A, B & D, maxillary barbel pointed, not elongated as a thread [A, *Euchiloglanis davidi*, topotype, SWFC 200204018, 111.0 mm SL, Muping, Baoxing Co., Sichuan Prov., China; B, *E. kishinouyei*, topotype, SWFC 200505071, 124.4 mm SL, Guankou, Dujiangyan City (formerly Kwan-hsien or Guanxian Co.), Sichuan Prov., China; D, *E. longus*, SWFC 200311007, holotype, 135.2 mm SL, Mola, Jingdong Co., Yunnan Prov., China]; C, maxillary barbel slender, pointed, elongated as a thread (*E. longibarbatus*, SWFC 200505059, paratype, 175.2 mm SL, Sigongli, Yajiang Co., Sichuan Prov., China).

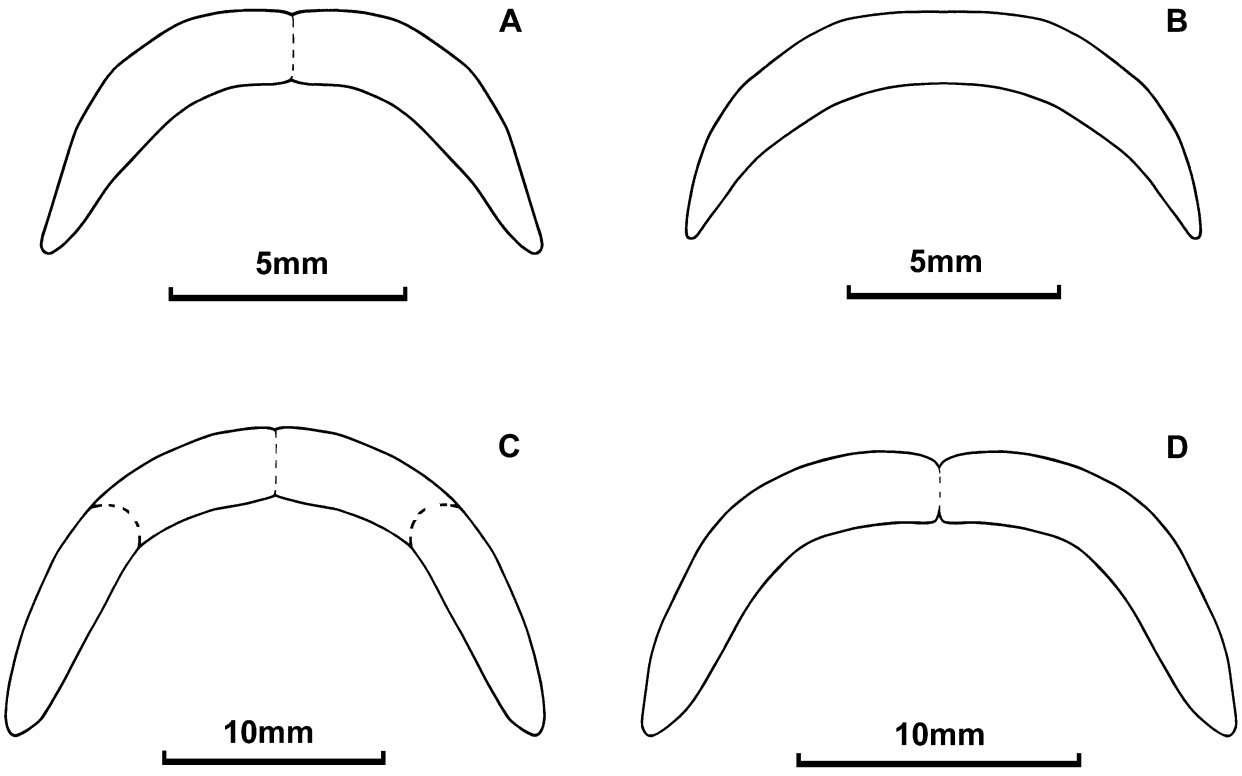

FIGURE 3. Ventral view of premaxillary tooth band. A & D, premaxillary band with a median indentation (A, *Euchiloglanis davidi*, SWFC 200204018, 111.0 mm SL, Muping, Baoxing Co., Sichuan Prov., China; D, *E. longus*, SWFC 200311001, paratypes, 221.9 mm SL, Mola, Jingdong Co., Yunnan Prov., China); B, premaxillary band without indentation (*E. kishinouyei*, SWFC 200505071, topotype, 124.4 mm SL, Guankou, Dujiangyan City [formerly Kwan-hsien or Guanxian Co.], Sichuan Prov., China); C, premaxillary band with three indentations (*E. longibarbatus*, SWFC 200505059, paratype, 175.2 mm SL, Sigongli, Yajiang Co., Sichuan Prov., China).

Diagnosis. *Euchiloglanis davidi* differs from *E. longibarbatus* **n. sp.** by having a pointed maxillary barbel, not elongated as a thread, with the tip reaching only to the gill opening (Fig. 2A) (vs. the maxillary barbel elongated as a thread, with the tip reaching posteriorly beyond the gill opening, Fig. 2C). *Euchiloglanis davidi* differs from *E. longibarbatus* **n. sp.** and *E. kishinouyei* by having a median indentation in the premaxillary tooth band (Fig. 3A) (vs. *E. longibarbatus* with three indentations in the premaxillary tooth band, one in the middle and two at the sides, Fig. 3C; *E. kishinouyei* without indentations, Fig. 3B). It differs from *E. kishinouyei*, *E. longus* **n. sp.**, and *E. longibarbatus* **n. sp.** by having the length of the pectoral fin equal to 90.5–117.1% (vs. 75.5–89.6, 78.4–89.5, and 71.2–89.9% respectively) of distance between insertions of pectoral and pelvic fins. *Euchiloglanis davidi* further differs from *E. kishinouyei* and *E. longibarbatus* **n. sp.** by having the distance between the insertion of the pelvic-fin and the anus being equal to 100.0–125.0% (vs. 81.5–97.5 and 75.5–92.2% respectively) of distance between the insertions of the pectoral and the pelvic fins. It further differs from *E. longus* **n. sp.** by having the caudal peduncle depth being equal to 7.1–9.7% (vs. 3.4–5.5%) of the standard length and 29.3–46.2% (vs. 14.1–27.0%) of the length of caudal peduncle. *Euchiloglanis davidi* differs from *E. dorsoarcus* and *E. phongthoensis* by having the anus located midway between the pelvic-fin insertion and the anal-fin origin (vs. the distance from the anus to pelvic-fin insertion equal to about 50% of the distance from the anus to the anal-fin origin).

Description. Morphometric and meristic data are in Table 1. Head compressed and snout broadly rounded when viewed dorsally. Eyes small and embedded in skin, located on dorsal surface of head; distance from pupil to tip of snout longer than to dorsal corner of gill opening. Barbels flattened, in four pairs. Nasal barbel with small flap of thin skin fringing posterior margin, not reaching or reaching to anterior margin of orbital. Maxillary barbel with small flap of thin skin, not elongated as a thread (Fig. 4A), reaching to gill opening. Origin of inner mandibular barbel close to ventromedial line. Outer mandibular barbel almost reaching pectoral-fin origin.

Mouth inferior and transverse. Anterior margin of premaxillary tooth band exposed when mouth closed. Oral teeth conical and pointed, arranged irregularly and embedded in skin. Premaxillary tooth band crescent-shaped with a median indentation, depth of which increases slightly with growth. Lateral edges of premaxillary tooth band extend posteriorly (Fig. 5A). Gill opening extends from posttemporal region to base of first pectoral fin element. Post-labial groove interrupted, ending at base of inner mandibular barbel. Lower lip connected to base of maxillary barbel by skin flap, without sulcus between them.

Dorsal profile rising gradually from tip of snout to origin of dorsal fin, then gradually sloping ventrally to end of caudal peduncle. Body gradually compressed behind origin of adipose fin. Surface of abdomen flattened. Oral region and anterior part of abdomen with dense papillae, gradually decreasing posteriorly.

Dorsal fin located at point through anterior third of body. Distance of dorsal-fin origin to tip of snout longer than distance from dorsal-fin origin to adipose-fin origin. Dorsal fin without spine, distal margin truncate. Tip of last dorsal-fin ray extending posteriorly beyond vertical through pelvic-fin insertion when depressed. Adipose-fin not connected with caudal-fin base, posterior end concave and free. Origin of adipose fin anterior or posterior to vertical through tip of pelvic-fin rays. Adipose-fin base shorter than predorsal length. Distance from origin of anal fin to base of caudal fin longer than distance from anal-fin origin to pelvic-fin origin. Pectoral fin usually extending to pelvic-fin origin. Distance from pelvic-fin origin to anal-fin origin about equal to or longer than distance from pelvic-fin origin to pectoral-fin origin. Pelvic fin reaching posteriorly beyond anus. Anus located midway between pelvic-fin insertion and anal-fin origin. Caudal fin truncate. Lateral line complete, mid-lateral and distinct.

Coloration in fresh specimens. According to collecting records, green-yellow on dorsal surface, milk-white on abdomen. Dorsal fin green-yellow with a lighter medial band, becoming narrow with growth. Pectoral and pelvic fins gray-black with lighter colour around distal edge. Caudal fin gray-black with a small yellow patch in the middle.

Distribution. Known from the Dadu-He and Qingyi-Jiang (branches of the Min-Jiang, Yangtze basin, China) (Fig. 4).

Habitat and ecology. *Euchiloglanis davidi* has been collected from medium sized rivers with stony or rock substrate. *Euchiloglanis davidi* is found in rapid flow and creeps along the substrate. Dissecting their intestine indicates that they feed mainly on aquatic insects and their larvae. According to villagers, adults spawn in apertures of the river bottom in May to June and the eggs are viscous.

TABLE 1. Counts and measurements of *Euchiloglanis davidi* and *E. kishinouyei*.

	E. davidi			*E. kishinouyei*			
Locality	Sichuan: Baoxing: Yanjing & Muping			Sichuan: Dujiangyan: Yingxiu			
Number specimens	44			Neotype	7		
Dorsal-fin rays	i, 5			i, 5	i, 5-6		
Pectoral-fin rays	i, 12–13			i, 12	i, 11–13		
Pelvic-fin rays	i, 5			i, 5	i, 5		
Anal-fin rays	i, 4–5			i, 5	i, 4–5		
Branched caudal-fin rays	7+8			7+8	7+8		
% standard length	mean	range	SD		mean	range	SD
Predorsal length	35.7	29.53–42.1	2.19	36.3	34.8	33.4–36.6	1.32
Dorsal-fin base length	10.7	9.0–12.5	0.80	11.2	10.0	8.9–11.7	0.90
Body depth	13.5	10.3–16.9	1.08	12.3	13.7	11.7–15.5	1.21
Head length	25.2	20.8–30.3	1.92	25.1	24.3	23.0–26.1	1.00
Maximum head width	22.0	19.6–25.9	1.42	19.8	20.7	17.8–22.8	1.81
Caudal-peduncle length	22.1	17.3–25.3	1.75	21.3	21.6	20.5–23.8	1.21
Caudal-peduncle depth	8.3	7.1–9.7	0.61	6.9	6.9	6.3–7.3	0.31
Dorsal-fin insertion to adipose-fin origin	22.6	14.9–28.1	3.35	20.7	21.9	17.8–26.9	2.81
Snout to adipose-fin origin	65.2	60.9–70.0	2.09	66.7	66.0	62.2–68.9	2.33
Dorsal-fin length	18.5	15.7–22.0	1.34	18.1	17.3	13.9–19.1	1.61
Pectoral-fin length	27.4	24.3–32.4	1.82	24.2	25.8	25.1–27.0	0.66
Pelvic-fin length	19.6	17.8–23.3	1.19	18.2	18.0	17.0–18.8	0.67
Anal-fin length	14.6	13.2–17.2	0.86	14.8	14.0	13.2–14.9	0.59
Anal-fin base length	6.9	5.0–8.1	0.65	5.6	6.3	5.1–8.4	1.10
Caudal-fin length	19.7	16.3–25.0	1.79	18.3	17.4	16.0–19.6	1.31
Adipose-fin base length	26.7	21.6–30.7	2.41	23.3	25.0	21.1–28.6	2.53
% head length							
Snout length	54.9	37.9–64.0	3.64	59.9	57.5	55.7–60.1	1.68
Eye diameter	7.2	5.7–9.0	0.79	6.5	6.0	4.6–7.5	0.95
Interorbital width	28.5	24.1–35.2	2.10	26.3	28.9	25.4–32.3	2.50
% Pt-Pl length							
Pectoral-fin length	98.7	83.0–117.1	7.41	82.2	90.3	75.5–103.0	9.54
Pl-A length	101.1	72.7–125.0	11.17	88.2	96.8	70.8–124.6	17.57
% Pl-A length							
Pelvic-fin length	70.5	59.1–93.2	9.42	69.9	66.0	55.5–78.5	7.26
% length of caudal peduncle							
Caudal peduncle depth	37.6	29.3–46.2	4.05	32.3	31.8	28.2–34.3	2.15

***Euchiloglanis kishinouyei* Kimura**

(Fig. 2B, Fig. 3B, Fig. 5)

Chimarrhiththys davidi: Regan, 1905 (in part): 183 (Eastern Tibet).

Exostoma davidi: Günther in Pratt, 1892: 245 (Min River [=Min-Jiang], Sze Chuen [=Sichuan]) [Min-Jiang drainage].

Euchiloglanis davidi: Norman, 1925 (in part): 574 (Eastern Tibet); Hora & Silas, 1952 (in part): 17 (Eastern Tibet, Yunnan and Szechwan [Sichuan]); Ding, 1994 (in part): 484–486 (Guanxian [=Dujiangyan], Sichuan) [Min-Jiang drainage]; Guo *et al.*,

2004a (in part): 261 (Guanxian [=Dujiangyan], Wenchuan, Maoxian, Heishui, and Lixian, Sichuan) [Min-Jiang drainage]; Peng *et al.*, 2004: 981 (Dujiangyan [=Dujiangyan], Sichuan) [Min-Jiang drainage]; Guo *et al.*, 2007 (in part): 58 (Maoxian and Wenchuan, Sichuan) [Min-Jiang drainage].

Euchiloglanis kishinouyei: Kimura, 1934: 178–180 (Kwan-hsien [Guanxian], Szechwan [Sichuan] Prov., China) [Min-Jiang drainage]; Ding, 1994 (in part): 487–489 (Guanxian [=Dujiangyan], Sichuan) [Min-Jiang drainage]; Chu & Mo, 1999 (in part): 162–163 (Guanxian, Sichuan) [Min-Jiang drainage]; Guo *et al.*, 2004a (in part): 261 (Guanxian [=Dujiangyan], Wenchuan, Maoxian, Heishui, and Lixian, Sichuan) [Min-Jiang drainage]; Peng *et al.*, 2004 (in part): 981 (Wenchuan, Sichuan) [Min-Jiang drainage]; Guo *et al.*, 2007 (in part): 58 (Wenchuan, Sichuan) [Min-Jiang drainage].

Glyptosternum davidi: Hora, 1923 (in part): 37 (Eastern Tibet and adjoining parts of China).

Coraglanis kishinouyei: Hora & Silas, 1952: 12 (Chengtu or Kiating, Szechwan [Sichuan], China) [Min-Jiang drainage]; Chu, 1979 (in part): 77 (Sichuan)[upper Min-Jiang only].

Material examined. All from Min-Jiang: Neotype: SWFC 200505068, 135.3 mm SL, Yingxiu, 31°06’54.86’’ N, 103°28’59.19’’ E, Dujiangyan City (formerly Kwan-hsien or Guanxian Co.), Sichuan Prov., China; UF 177381, 2 ex., 121.8–123.6 mm SL, SWFC 200505065-67, SWFC 200505069-70, 5 ex., 120.4–134.6 mm SL, all same data as neotype.

Diagnosis. *Euchiloglanis kishinouyei* differs from *E. longibarbatus* by having a pointed maxillary barbel, not elongated as a thread, with the tip reaching only to the gill opening (Fig. 2B) (vs. maxillary barbel elongated as a thread, with tip reaching posteriorly beyond gill opening, Fig. 2C). *Euchiloglanis kishinouyei* differs from *E. davidi*, *E. longibarbatus* **n. sp.** and *E. longus* **n. sp.** by lacking indentations in premaxillary tooth band (Fig. 3B) (vs. with indentations, Fig. 3A, C, D). It differs from *E. davidi* by having the length of the pectoral fin being equal to 75.5–89.6% (vs. 90.5–117.1%) of distance between insertions of pectoral and pelvic fins and further differs from *E. davidi* and *E. longus* by having the distance between insertion of pelvic-fin and origin of anus being equal to 81.5–97.5% (vs. 100.0–125.0 and 108.9–140.6% respectively) of distance between insertions of pectoral and pelvic fins. *Euchiloglanis kishinouyei* differs from *E. dorsoarcus* and *E. phongthoensis* by having the anus located midway between the pelvic-fin insertion and the anal-fin origin (vs. the distance from the anus to pelvic-fin insertion equal to about 50% of the distance from the anus to the anal-fin origin).

Description. Morphometric and meristic data are in Table 1. Head compressed and snout broadly rounded when viewed dorsally. Eyes small and embedded in skin, located on dorsal surface of head; distance from pupil to tip of snout longer than to dorsal corner of gill opening. Barbels flattened, in four pairs. Nasal barbel with small flap of thin skin fringing posterior margin, not reaching or reaching to anterior margin of orbital. Maxillary barbel with small flap of thin skin, not elongated as a thread (Fig. 4B), reaching to gill opening. Origin of inner mandibular barbel close to ventromedial line. Outer mandibular barbel almost reaching pectoral-fin origin.

Mouth inferior and transverse. Anterior margin of premaxillary tooth band exposed when mouth closed. Oral teeth conical and pointed, arranged irregularly and embedded in skin. Premaxillary tooth band crescent-shaped without any indentations. Lateral edges of premaxillary tooth band extend posteriorly (Fig. 5B). Gill opening extends from posttemporal region to base of first pectoral fin element. Post-labial groove interrupted, ending at base of inner mandibular barbel. Lower lip connected to base of maxillary barbel by skin flap, without sulcus between them.

Dorsal profile rising gradually from tip of snout to origin of dorsal fin, then gradually sloping ventrally to end of caudal peduncle. Body gradually compressed behind origin of adipose fin. Surface of abdomen flattened. Oral region and anterior part of abdomen with dense papillae, gradually decreasing posteriorly.

Dorsal fin located at point through anterior third of body. Distance of dorsal-fin origin to tip of snout longer than distance from dorsal-fin origin to adipose-fin origin. Dorsal fin without spine, distal margin truncate. Tip of last dorsal-fin ray extending to or extending posteriorly beyond vertical through pelvic-fin insertion when depressed. Adipose-fin not connected with caudal-fin base, posterior end concave and free. Origin of adipose fin anterior or posterior to vertical through tip of pelvic-fin rays. Adipose-fin base shorter than predorsal length. Distance from origin of anal fin to base of caudal fin longer than distance from anal-fin origin to pelvic-fin origin. Pectoral fin not extending to pelvic-fin origin. Distance from pelvic-fin origin to anal-fin origin shorter than distance from pelvic-fin origin to pectoral-fin origin. Pelvic fin reaching posteriorly beyond anus. Anus located midway between pelvic-fin insertion and anal-fin origin. Caudal fin truncate. Lateral line complete, mid-lateral and distinct.

Coloration in fresh specimens. According to collecting records, green-yellow on dorsal surface, milk-white on abdomen. Dorsal fin green-yellow with a lighter medial band, becoming narrow with growth. Pectoral and pel-

vic fins gray-black with lighter color around distal edge. Caudal fin gray-black with a small yellow patch in the middle.

Distribution. Known only from the upper Min-Jiang (Yangtze River basin, China) (Fig. 4).

Habitat and ecology. The reaches where specimens were collected are floodplain, about 30 m width with sand and rock substrate. Because rainfall concentrates in May to August in the area of Dujiangyan City, the floodwater falls back rapidly and frequently. In the rainy season the current is turbid and rapid. *Euchiloglanis kishinouyei* feeds mainly on aquatic insects and their larvae. According to villagers, adults spawn in apertures of the river bottom in May to June and the eggs are viscous.

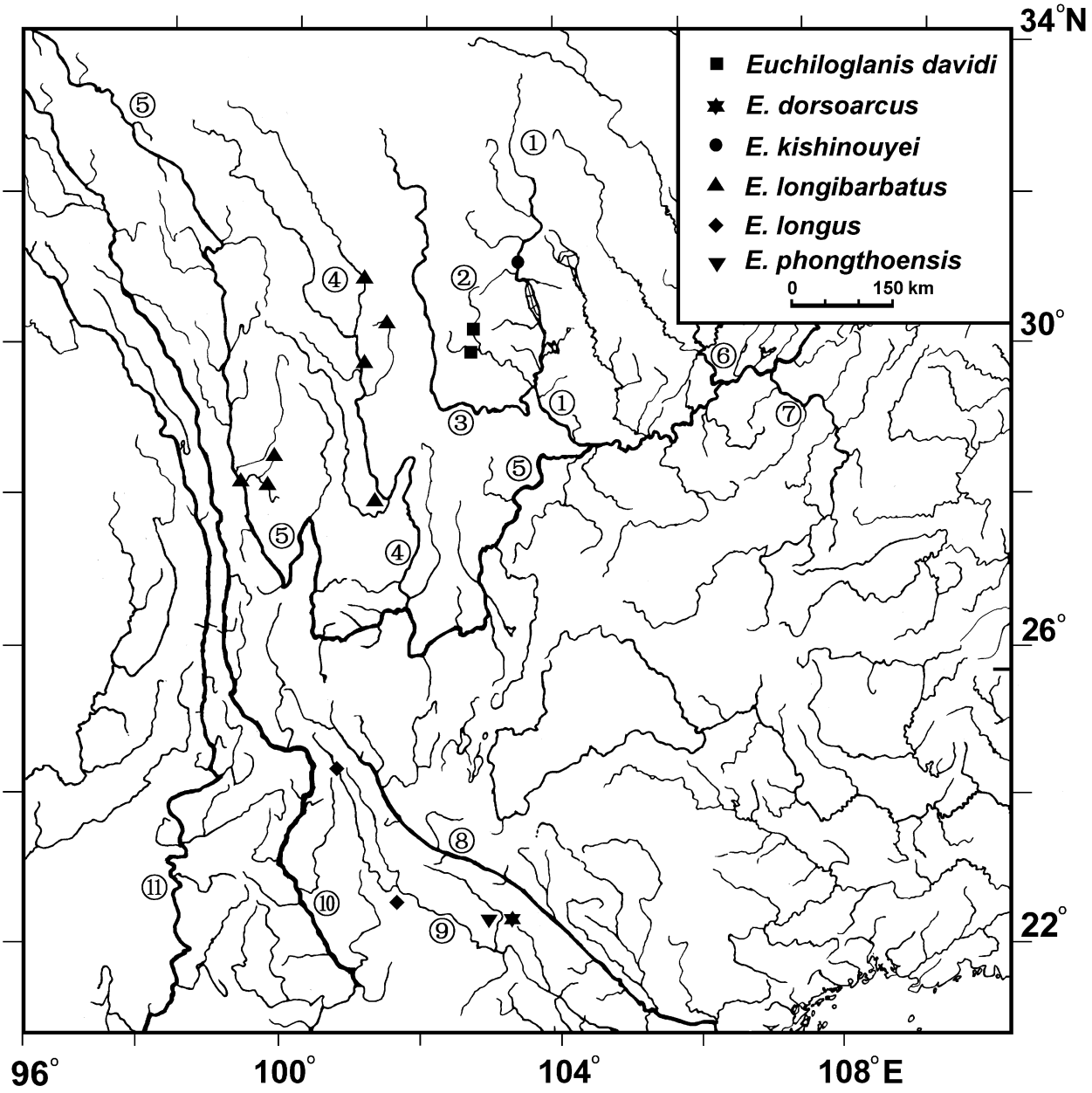

FIGURE 4. Collecting localities of examined specimens of *Euchiloglanis*. A symbol may represent several adjacent localities. 1, Min-Jiang, upper tributary of Yangtze River; 2, Qingyi-Jiang, branch of Dadu-He; 3, Dadu-He, branch of Min-Jiang; 4, Yalong-Jiang, upper tributary of Yangtze River; 5, Jinsha-Jiang, upper Yangtze River; 6, Jaling-Jiang, branch of Yangtze River; 7, Wu-Jang, branch of Yangtze River; 8, Yuan-Jiang, the upper Red River; 9, Lixian-Jiang, branch of Red River; 10, Mekong River; 11, Salween River.

FIGURE 5. *Euchiloglanis kishinouyei*, SWFC 200505068, neotype, 135.3 mm SL; Yingxiu, Dujiangyan City (formally called Kwan-hsien or Guanxian Co.), Sichuan Prov., China. Dorsal, lateral and ventral views. Scale bar = 10 mm.

***Euchiloglanis longibarbatus*, n. sp.**

(Fig. 2C, Fig. 3C, Fig. 6)

Euchiloglanis davidi: Ding, 1994 (in part): 486 (Jinsha-Jiang and Yalong-Jiang) [Jinsha-Jiang and Yalong-Jiang drainages]; Guo *et al*., 2004a (in part): 261 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Guo *et al*., 2004b (in part): 1588 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Peng *et al*., 2006: 569 (Amo, Yunnan) [near Zhongdian, (28.15483°N, 99.40704°E), Jinsha-Jiang drainage]; Guo *et al*., 2007 (in part): 58 (Yajiang, Sichuan) [Yalong-Jiang drainage].

Euchiloglanis kishinouyei: Chu *et al*., 1990: 223 (Judian, Lijiang, Yunnan) [Jinsha-Jiang drainage]; Ding, 1994 (in part): 487–489 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Chu & Mo, 1999: 162 (Tongtianhe, Qinghai; Judian, Lijiang, Yunnan; Jiangda, Tibet) [Jinsha-Jiang drainage]; Guo *et al*., 2004a (in part): 261 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Guo *et al*. 2004b (in part): 1588 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Peng *et al*., 2004 (in part): 981 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Guo *et al*., 2005: 348 (Yajiang, Sichuan) [Yalong-Jiang drainage]; Guo *et al*., 2007 (in part): 58 (Yajiang, Sichuan) [Yalong-Jiang drainage].

Coraglanis kishinouyei: Chu, 1979 (in part): 77 (Yunnan, Tibet, Qinhai) [Jinsha-Jiang drainage]; Wu & Chen, 1979 (in part): 293 (Tongtian-He in Yushu, Qinhai) [upper Jinsha-Jiang drainage].

Holotype. SWFC 200505058, 199.6 mm TL, 179.2 mm SL; Sigongli, 30°01’56.50’’ N, 101°00’55.52’’ E, Yalong-Jiang (a tributary of Jinsha-Jiang), Yajiang Co., Ganzi, Sichuan Prov.; X Li, 10 May 2005.

Paratypes. SWFC 200505059, 200505061-62, 3 ex., 174.5–198.4 mm TL, 155.6–175.2 mm SL; data as for holotype. UF 177382, 2 ex. 123.0–133.0 mm TL, 105.6–117.2 mm SL and SWFC 200108240-41, 2 ex., 137.0–150.0 mm TL, 121.2–130.0 mm SL; Wujing, 27°41’55.26’’ N, 99°27’39.35’’ E, Jinsha-Jiang, Zhongdian Co., Yunnan Prov.; Q Zhang and YW Zhou, 18 Aug. 2001. SWFC 200004044, 1 ex., 191.0 mm TL, 169.0 mm SL; Benzilan, 28°14’28.40’’ N, 99°18’21.60’’ E, Jinsha-Jiang, Deqin Co., Yunnan Prov.; YW Zhou and XF Pan, 23 April 2000. SWFC 200108210, 1 ex., 147.0 mm TL, 126.0 mm SL; Dongwang, 28°34’20.73’’ N, 99°41’13.57’’ E, Jinsha-Jiang, Zhongdian Co., Yunnan Prov.; XF Pan and F Wu, 18 Aug. 2001. SWFC 200505001-02, 200505006, 200505009, 200505010-11, 200505013, 7 ex., 112.6–142.4 mm TL, 96.7–127.8 mm SL; Xianshui, 30°58’40.32’’ N, 101°07’30.85’’ E, Yalong-Jiang, Daofu Co., Ganzi, Sichuan Prov.; Y Yang, 7 May 2005. SWFC 200505042-43, 2 ex., 139.7–157.5 mm TL, 125.5–141.5 mm SL; Xinduqiao, 30°00’57.55’’ N, 101°32’02.57’’ E, Yalong-Jiang, Kangding Co., Ganzi, Sichuan Prov.; Y Yang, 10 May 2005. SWFC 200505044-47, 200505049-51, 7 ex., 132.1–158.8 mm TL, 119.2–142.4 mm SL; Wenjiaping, 28°32’05.09’’ N, 101°45’04.32’’ E, Yalong-Jiang, Jiulong Co., Ganzi, Sichuan Prov.; X Li, 10 May 2005. SWFC 200505088-89, 2 ex., 172.7–200.3 mm TL, 152.4–178.2 mm SL; Bamei, 30°24’15.20’’ N, 101°45’26.86’’ E, Yalong-Jiang, Daofu Co., Ganzi, Sichuan Prov.; Y Yang, 9 May 2005.

Diagnosis. *Euchiloglanis longibarbatus* differs from *E. davidi*, *E. kishinouyei*, and *E. longus* **n. sp.** by having a pointed maxillary barbel, elongated as a thread, with the tip reaching posteriorly beyond the gill opening (Fig. 2C) (vs. the maxillary barbel not elongated as a thread, with the tip only reaching to the gill opening, Fig. 2A, B, D). *Euchiloglanis longibarbatus* differs from *E. kishinouyei*, *E. davidi* and *E. longus* **n. sp.** by having three indentations in the premaxillary tooth band, one in the middle and two on the sides (Fig. 3C) (vs. *E. kishinouyei* without indentations, Fig. 3B; *E. davidi* and *E. longus* **n. sp.** with a median indentation, Fig. 3A, D). It differs from *E. davidi* by having the length of the pectoral fin equal to 71.2–89.9% (vs. 90.5–117.1%) of the distance between the insertions of the pectoral and pelvic fins (Table 1), and from *E. davidi* and *E. longus* **n. sp.** by having the distance between the insertion of the pelvic fin and the anus equal to 75.5–92.2% (vs. 100.0–125.0 and 108.9–130.0% respectively) of the distance between the insertions of the pectoral and pelvic fins (Tables 1 and 2). *Euchiloglanis longibarbatus* differs from *E. dorsoarcus* by having the anal-fin origin closer to the caudal-fin base than to the pelvic-fin origin (vs. the anal-fin origin closer to the pelvic-fin origin than to the caudal-fin base), and from *E. dorsoarcus* and *E. phongthoensis* by having the anus located midway between the pelvic-fin insertion and the anal-fin origin (vs. the distance from the anus to pelvic-fin insertion equal to about 50% of the distance from the anus to the anal-fin origin). *Euchiloglanis longibarbatus* further differs from *E. longus* **n. sp.** by having the depth of the caudal peduncle equal to 26.8–44.5% (vs. 14.1–27.0%) of the caudal-peduncle length.

Description. Morphometric and meristic data are in Table 2. Head compressed and snout broadly rounded when viewed dorsally. Eyes small and embedded in skin, located on dorsal surface of head; distance from pupil to tip of snout longer than to dorsal corner of gill opening. Barbels flattened, in four pairs. Nasal barbel with small flap of thin skin fringing posterior margin. not reaching or reaching to anterior margin of orbital. Maxillary barbel with small flap of thin skin, elongated as a thread with pointed tip (Fig. 2C), reaching posteriorly beyond gill opening. Origin of inner mandibular barbel close to ventromedial line. Outer mandibular barbel almost reaching pectoral-fin origin.

Mouth inferior and transverse. Anterior margin of premaxillary tooth band exposed when mouth closed. Oral teeth conical and pointed, arranged irregularly and embedded in skin. Premaxillary tooth band crescent-shaped with three indentations, one in middle and two laterally. Depth of indentation increases slightly with growth . Lateral edges of premaxillary tooth band extend posteriorly (Fig. 3C). Gill opening extends from posttemporal region to base of first pectoral fin element. Post-labial groove interrupted, ending at base of inner mandibular barbel. Lower lip connected to base of maxillary barbel by skin flap, without sulcus between them.

Dorsal profile rising gradually from tip of snout to origin of dorsal fin, then gradually sloping ventrally to end of caudal peduncle. Body gradually compressed behind origin of adipose fin. Surface of abdomen flattened. Oral region and anterior part of abdomen with dense papillae, gradually decreasing posteriorly.

Dorsal fin located at point through anterior third of body. Distance of dorsal-fin origin to tip of snout longer than distance from dorsal-fin origin to adipose-fin origin. Dorsal fin without spine, distal margin truncate. Tip of last dorsal-fin ray extending posteriorly beyond vertical through pelvic-fin insertion when depressed. Adipose-fin not connected with caudal-fin base, posterior end concave and free. Origin of adipose fin opposite to vertical

through tip of pelvic-fin rays. Adipose-fin base shorter than predorsal length. Distance from origin of anal fin to base of caudal fin longer than distance from anal-fin origin to pelvic-fin origin. Pectoral fin not extending to pelvic-fin origin. Distance from pelvic-fin origin to anal-fin origin shorter than distance from pelvic-fin origin to pectoral-fin origin. Pelvic fin reaching posteriorly beyond anus. Anus located midway between pelvic-fin insertion and anal-fin origin. Caudal fin truncate. Lateral line complete, mid-lateral and distinct.

TABLE 2. Counts and measurements of *E. longibarbatus* **n. sp.**

	Holotype	Paratypes		
Locality	Sichuan: Yajiang	Sichuan: Yajiang, Daofu, Kangding Jiulong Yunnan: Deqin, Zhongdian		
Number specimens		27		
Dorsal-fin rays	i, 5	i, 5-6		
Pectoral-fin rays	i, 12	i, 12–14		
Pelvic-fin rays	i, 5	i, 5		
Anal-fin rays	i, 5	i, 4–5		
Branched caudal-fin rays	7+8	7+8		
in % of standard length		mean	range	SD
Predorsal length	38.8	36.3	32.2–41.9	2.31
Dorsal-fin base length	11.3	11.0	8.9–15.4	1.63
Body depth	15.1	13.3	10.0–18.1	1.94
Head length	26.3	24.0	17.7–29.1	2.83
Maximum head width	25.2	22.3	19.0–26.7	2.01
Caudal peduncle length	21.0	22.8	19.0–25.4	1.60
Caudal peduncle depth	7.0	7.5	6.2–8.7	0.68
Dorsal-fin insertion to adipose-fin origin	18.7	18.8	10.0–25.0	4.00
Snout to adipose-fin origin	66.6	64.8	59.0–69.1	2.80
Dorsal-fin length	18.8	18.9	16.1–20.3	1.06
Pectoral-fin length	23.7	24.7	21.3–27.3	1.16
Pelvic-fin length	17.4	17.9	15.4–20.3	1.03
Anal-fin length	13.5	14.9	12.4–19.1	1.21
Anal-fin base length	6.1	6.9	5.1–9.2	0.97
Caudal-fin length	16.7	17.3	11.8–20.0	1.86
Adipose-fin base length	25.9	27.9	22.6–34.2	3.08
in % of head length				
Snout length	59.9	58.8	47.2–82.6	8.63
Eye diameter	4.7	6.1	3.8–9.1	1.54
Interorbital width	30.4	30.6	22.1–45.7	5.98
in % of Pt-Pl length				
Pectoral-fin length	76.4	83.6	71.2–92.8	5.28
Pl-A length	81.3	87.6	75.5–104.9	8.27
in % of Pl-A length				
Pelvic-fin length	69.0	69.5	60.7–82.0	5.39
in % of length of caudal peduncle				
Caudal peduncle depth	33.5	33.0	26.8–44.5	4.55

Coloration in fresh specimens: According to collecting records, gray-yellow on dorsal surface with scattered small black spots. Abdomen milk-white. Pectoral and pelvic fins gray-yellow with lighter color around distal edges. Tip of caudal fin gray-black with irregular light yellow patch medially.

Distribution. Known from the Jinsha-Jiang drainage (upper Yangtze River basin, China), including the upper Jinsha-Jiang and the Yalong-Jiang (Fig. 4).

Habitat and ecology. The reaches where the types were collected are steep with dangerous shoals. The river bed is about 20 m width with cobblestones and rock substrate. The current is rapid and water is clear. According to villagers, *Euchiloglanis longibarbatus* **n. sp.** preys on other small fishes. They also feed on aquatic insects and small snails. Remains of small fishes were found in the intestines of dissected *Euchiloglanis longibarbatus* **n. sp.** specimens. When collecting specimens, we fished them by angleworms and aquatic insects. Adults spawn in apertures of the river bottom in May to June and the eggs are viscous.

Etymology. From the Latin *long*, meaning long; *barbatus*, meaning barbel, in reference to the long maxillary barbel. A noun in apposition.

FIGURE 6. *Euchiloglanis longibarbatus*, SWFC 200505058, holotype, 179.2 mm SL; Sigongli, Yajiang Co., Sichuan Prov., China. Dorsal, lateral and ventral views. Scale bar = 10 mm.

***Euchiloglanis longus*, n. sp.**
(Fig. 2D, Fig. 3D, Fig. 7)

Holotype. SWFC 200311007, 154.9 mm TL, 135.2 mm SL; Mola, 24°26'54.07'' N, 100°49'58.77'' E, a small tributary of Chuanhe, upper Lixian-Jiang, a tributary of Red River, Jingdong Co., Yunnan Prov.; Q Wang, 1 Nov. 2003.

Paratypes. UF 177383, 2 ex. 140.0–151.0 mm TL, 126.7–135.2 mm SL and SWFC 200311001-06, 200311008-18, 200311023, 18 ex., 94.0–249.0 mm TL, 79.9–221.9 mm SL; data as for holotype. SWFC 200412001-13, 13 ex., 66.0–217.3 mm TL, 59.1–191.5 mm SL; Guoqing, 22°37'27.98'' N, 101°53'00.08'' E, Jianma-He, a small tributary of the Lixian-Jiang, Red River basin, Jiangcheng Co., Yunnan Prov.; Y Yang and W Zhou, 8 Dec. 2004.

Diagnosis. *Euchiloglanis longus* differs from *E. longibarbatus* **n. sp.** by having a pointed maxillary barbel, not elongated as a thread, with the tip only reaching to the gill opening (Fig. 2D) (vs. the maxillary barbel elongated as a thread, with the tip reaching beyond the gill opening, Fig. 2C). *Euchiloglanis longus* differs from *E. kishinouyei* and *E. longibarbatus* **n. sp.** by having one median indentation in the premaxillary tooth band (Fig. 3D) (vs. indentations absent in *E. kishinouyei*, Fig. 3B and *E. longibarbatus* **n. sp.** with three indentations in the premaxillary tooth band, one in the middle and two on the sides, Fig. 3C). *Euchiloglanis longus* differs from *E. davidi* by having the length of the pectoral fin equal to 78.4–89.5% (vs. 90.5–117.1%) of the distance between the insertions of the pectoral and pelvic fins and from *E. kishinouyei* and *E. longibarbatus* **n. sp.** by having the distance between the insertion of the pelvic fin and the anus equal to 108.9–140.6% (vs. 81.5–97.5 and 75.5–92.2%, respectively) of the distance between the insertions of the pectoral and pelvic fins. *Euchiloglanis longus* differs from *E. davidi*, *E. kishinouyei* and *E. longibarbatus* **n. sp.** by having the depth of the caudal peduncle equal to 14.1–27.0% of the caudal-peduncle length (vs. 29.3–46.2, 28.2–34.3, and 26.8–44.5%, respectively) (Tables 1 and 3). *Euchiloglanis longus* differs from *E. dorsoarcus* by having the anal-fin origin closer to the caudal-fin base than to the pelvic-fin origin (vs. the anal-fin origin closer to the pelvic-fin origin than to the caudal-fin base), and from *E. phongthoensis* by having the distance from the adipose-fin origin to the dorsal-fin insertion about 50% of the length of the adipose-fin base (vs. equal to the length of the adipose-fin base).

Description. Morphometric and meristic data are given in Table 3. Head compressed and snout broadly rounded when viewed dorsally. Eyes small and embedded in skin, located on dorsal surface of head; distance from pupil to tip of snout longer than to dorsal corner of gill opening. Barbels flattened, in four pairs. Nasal barbel with small flap of thin skin fringing posterior margin, not reaching or reaching only to anterior margin of orbital. Maxillary barbel with small flap of thin skin, not elongated as a thread (Fig. 2D), reaching gill opening. Origin of inner mandibular barbel close to ventromedial line. Outer mandibular barbel almost reaching pectoral-fin origin.

Mouth inferior and transverse. Anterior margin of premaxillary tooth band exposed when mouth closed. Oral teeth conical and pointed, arranged irregularly and embedded in skin. Premaxillary tooth band crescent-shaped with a median indentation, depth of which increases slightly with growth. Lateral edges of premaxillary tooth band extend posteriorly (Fig. 3D). Gill opening extends from posttemporal region to base of first pectoral-fin element. Post-labial groove interrupted, ending at base of inner mandibular barbel. Lower lip connected to base of maxillary barbel by skin flap, without sulcus between them.

Dorsal profile rising gradually from tip of snout to origin of dorsal fin, then gradually sloping ventrally to end of caudal peduncle. Body gradually compressed behind origin of adipose fin. Surface of abdomen flattened. Body more slender with growth. Oral region and anterior part of abdomen with dense papillae gradually decreasing posteriorly.

Dorsal fin located at point through anterior third of body. Distance from dorsal-fin origin to tip of snout longer than distance from dorsal-fin origin to adipose-fin origin. Dorsal fin without spine, distal margin truncate. Tip of last dorsal-fin ray extending beyond vertical through pelvic-fin insertion when depressed. Adipose fin not connected with caudal-fin base, posterior margin concave, free. Origin of adipose fin anterior to or opposite vertical through tip of pelvic-fin rays. Adipose-fin base shorter than predorsal length. Distance from anal-fin origin to base of caudal fin shorter than distance from anal-fin origin to pelvic-fin origin. Pectoral fin not extending to pelvic-fin origin. Distance from pelvic-fin origin to anal-fin origin longer than distance from pelvic-fin origin to pectoral-fin origin. Pelvic fin reaching beyond anus. Anus close to pelvic-fin insertion, located at one-third distance from pelvic-fin insertion to anal-fin origin. Caudal fin truncate. Lateral line completed, mid-lateral and distinct.

TABLE 3. Counts and proportional measurements of *E. longus* **n. sp.**

	Holotype	Paratypes		
Locality	Yunnan: Jingdong	Yunnan: Jingdong, Jiangcheng		
Number specimens		33		
Dorsal-fin rays	i, 5	i, 5–6		
Pectoral-fin rays	i, 15	i, 14–16		
Pelvic-fin rays	i, 5	i, 5		
Anal-fin rays	i, 4	i, 4		
Branched caudal-fin rays	7+8	7+8		
in % of standard length		mean	range	SD
Predorsal length	34.5	33.8	28.4–41.8	2.41
Dorsal-fin base length	9.8	10.4	8.0–13.2	1.33
Body depth	10.2	10.6	7.2–14.3	1.52
Head length	22.7	22.5	16.7–26.4	2.51
Maximum head width	19.4	19.1	16.6–22.2	1.50
Caudal peduncle length	24.5	22.3	18.4–26.1	1.68
Caudal peduncle depth	4.6	4.5	3.4–5.5	0.55
Dorsal-fin insertion to adipose-fin origin	16.8	19.4	15.6–23.4	2.10
Snout to adipose-fin origin	60.7	61.5	57.4–66.3	2.59
Dorsal-fin length	17.3	18.4	15.3–29.4	2.66
Pectoral-fin length	23.7	23.0	19.5–26.3	1.74
Pelvic-fin length	17.4	16.6	13.5–19.9	1.47
Anal-fin length	14.5	13.8	11.8–17.33	1.15
Anal-fin base length	6.8	7.0	5.3–13.0	1.43
Caudal-fin length	14.4	14.3	11.0–19.1	2.25
Adipose-fin base length	28.4	30.0	24.7–63.0	6.46
in % of head length				
Snout length	49.5	52.2	30.8–65.3	6.40
Eye diameter	8.5	7.4	5.5–12.0	1.40
Interorbital width	25.1	28.3	23.0–38.7	3.68
in % of Pt-Pl length				
Pectoral-fin length	91.7	89.0	78.5–103.3	5.22
Pl-A length	119.4	124.6	97.8–148.6	10.29
in % of Pl-A length				
Pelvic-fin length	56.2	51.5	43.1–68.4	5.35
in % of length of caudal peduncle				
Caudal-peduncle depth	18.7	20.6	14.1–27.0	3.36

Coloration in fresh specimens. According to collecting records, gray-black dorsal surface, milk-white venter. A pair of small yellow spots on each side of supraoccipital region. A small, oval, yellow spot at dorsal-fin origin and a pair of small yellow patches on each side of dorsal-fin origin and dorsal-fin insertion. Middle of dorsal fin with a yellow band, becoming narrower with growth. Origin and insertion of adipose fin each with narrow yellow patch. Upper and lower edges of caudal fin each with narrow yellow patch. Pectoral and pelvic fins dark gray with lighter color around distal edges. Pelvic-fin origin and the first unbranched fin ray with distinct light yellow patches. Caudal fin gray-black with small yellow patch in middle.

Distribution. Known only from the Lixian-Jiang, the upper Black River (Song Da), a tributary of Red River (Fig. 4).

Habitat and ecology. The landscapes of two localities where types collected are streams in valleys. The river beds are narrow and shallow, about 10 m wide and 0.5–1 m deep with cobblestones, gravels and rock substrate. The current is rapid and the water is clear. *Euchiloglanis longus* lies and creeps on the substrate with it's flatten oral region to anterior part of abdomen. Sometimes it quickly moves by swinging its slender caudal peduncle. According to villagers, *Euchiloglanis longus* mainly scrapes lichen growing on surface of cobblestones and gravels, feed on pieces of aquatic plants and organic scraps. Adults spawn in apertures of the river bottom in May to June and the eggs are viscous.

Etymology. From the Latin adjective *longus*, meaning long, referring to the long body and long caudal peduncle.

FIGURE 7. *Euchiloglanis longus*, SWFC 200311007, holotype, 135.2 mm SL; Mola, Jingdong Co., Yunnan Prov., China. Dorsal, lateral and ventral views. Scale bar = 10 mm.

Key to the species of *Euchiloglanis*

1 Distance from the anus to the pelvic-fin insertion equal to about 50% of the distance from the anus to the anal-fin origin (Black River drainage, China and Vietnam) 2

- Anus located midway between the pelvic-fin insertion and the anal-fin origin (upper Yangtze basin, China) 4
2 Anal-fin origin closer to the caudal-fin base than to the pelvic-fin insertion 3
- Anal-fin origin closer to the pelvic-fin insertion than to the caudal-fin base (Song Da (Black River) drainage, Vietnam). . . . . *E. dorsoarcus*
3 Distance from adipose-fin origin to dorsal-fin insertion about 50% of adipose-fin base length (Lixian-Jiang, upper Black River in Yunnan of China) . . . . . *E. longus*
- Distance from adipose-fin origin to dorsal-fin insertion about equal to adipose-fin base length (Song Da (Black River) drainage, Vietnam) . . . . . *E. phongthoensis*
4 Maxillary barbel pointed, not elongated as a thread, its tip only reaching to gill opening (Fig. 2A, 2B, 2D); premaxillary tooth band with one median indentation or without an indentation (Fig. 3A, 3B). 5
- Maxillary barbel slender and pointed, elongated as a thread, its tip reaching beyond gill opening (Fig. 2C); premaxillary tooth band with three indentations (Fig. 3C) (Jinsha-Jiang and Yalong-Jiang, upper Yangtze River basin, China) . . . . . *E. longibarbatus*
5 Distance between pelvic-fin insertion and anus equal to 100.0–125.0% of distance between pectoral- and pelvic-fin origins; premaxillary tooth band with median indentation (Fig. 3A) (Dadu-He and Qingyi-Jiang, branches of Min-Jiang, upper Yangtze River basin, China) . . . . . *E. davidi*
- Distance between pelvic-fin insertion and anus equal to 81.5–97.5% of distance between pectoral- and the pelvic-fin origins; premaxillary tooth band without indentation (Fig. 3B) (upper Min-Jiang of Yangtze River basin, China) . . . . . *E. kishinouyei*

Discussion

Euchiloglanis was diagnosed from all other genera of Glyptosternina by Thomson & Page (2006) by the following combination of characteristics: Interrupted post-labial groove; gill openings not extending onto venter; homodont dentition; pointed teeth in both jaws; and tooth patches in upper jaw joined into crescent-shaped band. Phylogenetic and biogeographic analyses of glyptosternoid fishes indicate that *Euchiloglanis* is derived from a *Glyptosternon*-like ancestor (He, 1995; He *et al*., 2001). Analyses of the mitochondrial cytochrome *b* gene suggest that *Euchiloglanis* is monophyletic (Peng *et al.*, 2004).

One of us (AWT) examined all of the syntypes of *Euchiloglanis davidi,* which were collected from "Yao-Tchy, Tibet, China" (now Yaoji, Baoxing County, Sichuan, China; fide Chu, 1981). They are in poor condition and almost nothing could be determined from them. The BMNH specimen (BMNH 1923.3.13.1) is in the best state of preservation and is herein designated the lectotype to eliminate any uncertainty of the identity of *E. davidi* owing to the possibility of one of the Paris specimens belonging to another species.

Kimura (1934) described *E. kishinouyei* from specimens collected from Kwan-hsien (= Guanxian County, now Dujiangyan City). These specimens were preserved in the Department of Biology of the Shanghai Science Institute, which was established by the Japanese government in Shanghai, China, after World War I. At the end of World War II, this institute was closed and nothing is known of what became of the fish collections. A search for the types of *E. kishinouyei* has been unsuccessful and we believe the holotype is no longer extant. It is therefore necessary to designate a neotype of *E. kishinouyei* to clarify its taxonomic status and we choose SWFC 200505068 as the neotype of *E. kishinouyei*. This specimen is deposited at the Museum of Zoology, Southwest Forestry University, Kunming, China, was collected from the original type locality of *E. kishinouyei,* and matches the original description of *E. kishinouyei*. *Euchiloglanis kishinouyei* differs from other *Euchiloglanis* species by the characteristics listed in the diagnosis above. These conditions satisfy the requirements of Articles 75.3.1-7 of the International Code Zoological Nomenclature (ICZN, 1999) for designation of a neotype.

Guo *et al*. (2004a) identified *E. davidi* and *E. kishinouyei* based on the traditional morphological characters used to separate these species and used a principal component analysis and a p-distance analysis to examine morphological distinctness in addition to comparing mitochondrial 16s rRNA sequences. Their results indicated that the two forms they identified as *E. davidi* and *E. kishinouyei* were sympatrically distributed in the Yangtze basin but were not morphologically or molecularly distinct and should be considered a single species. Our study examined additional morphological characters, and in contrast found three distinct forms of *Euchiloglanis* that are allopatrically distributed in the Yangtze basin. Specifically we found that *E. davidi* is restricted to the Dadu-He and Qingyi-Jiang; *E. kishinouyei* is restricted to the upper Min-Jiang; and *E. longibarbatus* is found in the upper Jinsha-Jiang and Yalong-Jiang.

The traditional morphological characters used to separate *E. davidi* and *E. kishinouyei* by Guo *et al*. (2004a) (maxillary barbels not extending beyond gill openings in *E. davidi* vs. extending beyond gill openings in *E. kishinouyei* and pectoral fins extending to origin of pelvic fins in *E. davidi* vs. not extending to origin of pelvic fins in *E.*

kishinouyei) cannot be used to accurately distinguish these species. We have not been able to examine the material used in the study by Guo *et al.* (2004a) because the specimens could not be loaned to us, but the names they assigned to specimens from certain localities strongly indicates that many of their specimens were misidentified. For example, they identified specimens from Guanxian and Maoxian as *E. davidi*. These sites are in the Min-Jiang drainage and we have determined that only *E. kishinouyei* occurs in this drainage. Guanxian is also the type locality of *E. kishinouyei* but they identified all the specimens they examined from this site as *E. davidi*. Additionally they identified specimens from Yajiang as both *E. davidi* and *E. kishinouyei*. Yajiang is in the Yalong-Jiang drainage and we have determined that only *E. longibarbatus* occurs in the Yalong-Jiang drainage.

Specimens of *Euchiloglanis* from Jialing-Jiang and Wu-Jiang, branches of Yangtze River, were recognized as *E. kishinouyei* by Tchang (1960) and Ding (1994). The taxonomic status of *Euchiloglanis* from these branches of Yangtze River as well the mainstream of middle Yangtze River should be examined in future studies. There are three species of *Euchiloglanis* in the Black River (Song Da in Vietnam, a tributary of the Red River). The exact distribution of these three species is uncertain, and additional collections may determine that these species are more widely distributed.

Chu (1986) divided Yunnan river drainages into two groups based on composition of fish genera. The first group includes the Irrawaddy, Nu-Jiang (upper Salween), and Lancang-Jiang (upper Mekong) drainages. The second group includes the Yuan-Jiang (upper Red River), Nanpan-Jiang (upper Pearl), and Jinsha-Jiang (upper Yangtze) drainages. Thus, the Lixian-Jiang (upper Black River) is a boundary dividing the ichthyofauna of Yunnan into two groups. Although the Lixian-Jiang is a large branch of the Red River, the ichthyofauna of the Lixian-Jiang is not consistent with the ichthyofauna of the mainstream of the Yuan-Jiang (upper Red River) (Zhou *et al*., 1999; Li *et al*., 2006). Species of *Euchiloglanis* occur in the Black River basin but not in the upper mainstream of the Red River, suggesting that the origin and history of the Black River is different from that of the upper mainstream Red River.

Based on the results of a cladistic analysis of morphological characters and the distributional patterns of Glyptosterninae, He *et al*. (2001) suggested that *Euchiloglanis* may have originated in the Jinsha-Jiang. Other than the Yangtze River basin, *Euchiloglanis* also occurs in Black River (a branch of Red River), which implies that the ancient Jinsha-Jiang may have been once connected with the ancient Lixian-Jiang (upper Black River).

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