

BEARDLESS BARB *Cyclocheilichthys apogon* (VALENCIENNES, 1842) (CYPRINIFORMES: CYPRINIDAE) IN MADURA ISLAND, INDONESIA

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ABSTRACT

The freshwater fish Beardless Barb *Cyclocheilichthys apogon* (Valenciennes, 1842) is a native species of Southeast Asia, including Western Indonesia area (Borneo, Sumatra and Java). Previously, the species was found only in the mainland of Java Island. This paper provides the first record of *C. apogon* in the Lembung River, one of the major rivers in Madura Island, Indonesia, thereby extending the species distribution up to 150 km northeast from the place of earlier record. The specimens of *C. apogon* were characterized as follows: dorsal fin rays 12; anal fin rays 8 - 9; pectoral fin rays 17 - 18; lateral line scales 34 - 35. A detailed description of the morphological characters of the specimen is provided in this manuscript.

Keywords: Cyprinid, distribution, freshwater fish

INTRODUCTION

In the last glacial era, Southeast Asia and Western Indonesia (Sumatera, Borneo and Java) were still connected as a single area called Sundaland, where many blochth rivers were connected to each other, extending from Indochina to the Java Sea (Voris 2000). Major rises in sea level in the South China Sea and Java Sea that occurred in that era had divided the Sundaland into several archipelagos (Pubellier & Morley 2014). This geographical change has resulted in the isolation of several freshwater fishes (Hubert *et al.* 2015), one of which was the Beardless Barb *Cyclocheilichthys apogon* (Weber & de Beaufort 1916).

C. apogon (Class: Actinopterygii; Order: Cypriniformes; Family: Cyprinidae) is a freshwater fish native to Southeast Asia and Western Indonesia (Rainboth 1996; Kottelat

2001; Kenthao & Jearranaiprepam 2018). The species is distributed widely in rivers across mainland Java, including East Java, Central Java and West Java (Weber & de Beaufort 1913; Roberts 1993). As reported in this paper, *C. apogon* was recently sighted in Lembung River, Madura Island, thereby widening the previously known distribution range of this species.

MATERIALS AND METHODS

Nineteen (19) live specimens of *C. apogon* were obtained from local fishermen during a fieldwork carried out on 22 - 23 March 2019 in Lembung River (7°02'21" S, 113°46'35" E) (Fig. 1). Administratively, the site is located on Madura Island, Sumenep Regency, East Java Province, Indonesia. The fishing gear used by the fishermen was a small hook fastened with molluscs as the baits (Stein *et al.* 2012).

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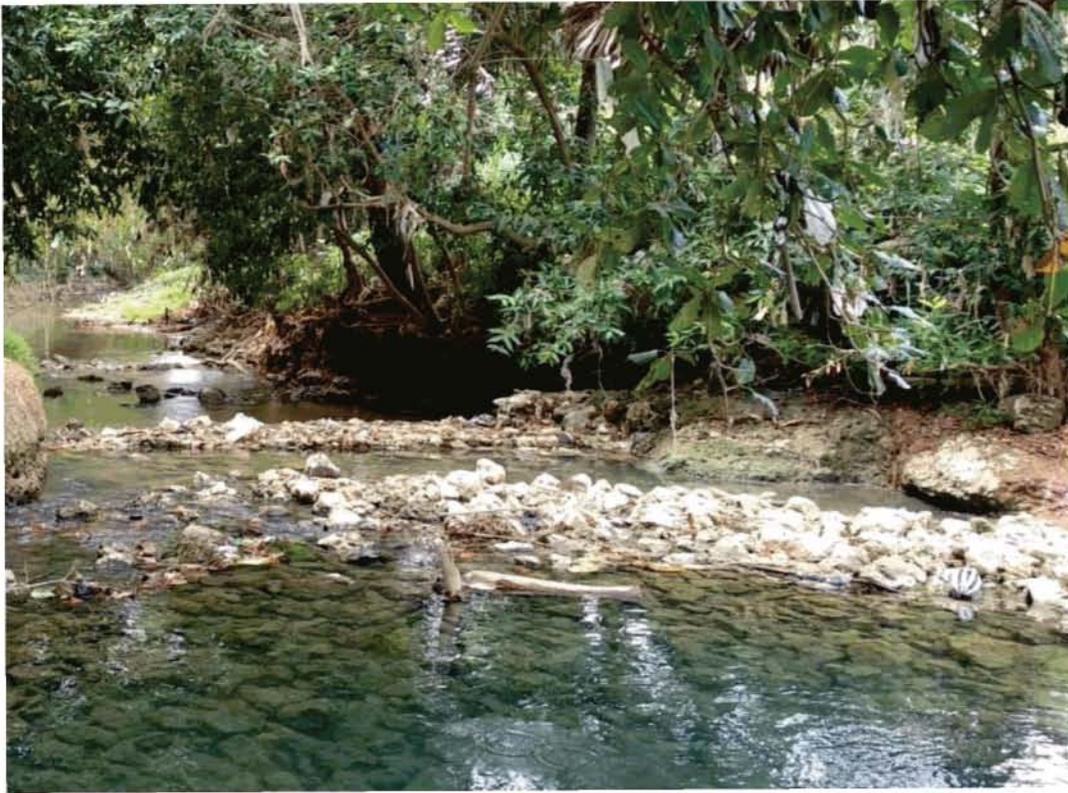


Figure 1 Lembung River, Madura Island where the *Cyclocheilichthys apogon* were collected on 23 March 2019

To ensure the identity of *C. apogon*, its morphological characters were analysed using the Weber and de Beaufort's (1916) model.

RESULTS AND DISCUSSION

The nineteen (19) live specimens of *C. apogon* had total lengths between 7.8 and 16.1 cm and total weights between 55.5 and 204 g. Five (5) of these were preserved in 96% alcohol solution (Hasan *et al.* 2019) and deposited as laboratory specimens at the Hydrobiology Laboratory, Universitas Brawijaya, Malang, Indonesia (UB.0002). The remaining fourteen (14) were transported in polyethylene bags with oxygen and were kept as livestock at the Fish Reproduction Laboratory, Brawijaya University, Malang, Indonesia.

Identification

Cyclocheilichthys apogon was distinguished from the other species of *Cyclocheilichthys* by having no barbels in the snout but with conspicuous folds

of the skin above the upper lip. Other morphological characters of the 5 preserved specimens are as follows: 12 dorsal fin rays; 8 - 9 anal fin rays; 17 - 18 pectoral fin rays; 34 - 35 lateral line scales; head pointed, lips swollen, with both lips evenly curved; dorsal deeply concave, origin of dorsal is opposite to 13th scale of lateral line and nearly in the middle of a line, connecting the end of the snout and the end of the shortest caudal rays, the location of which is nearer to snout in young specimens, far behind the origin of ventrals; anal concave, with a rather weak third spine that is longer than half head; pectorals reach the ventrals; ventrals are about equal to the pectorals, reaching or surpassing the anal; caudal deeply incised, while the lobes are rounded. Coloration in fresh specimen: yellowish brown, upper parts are dark brown, and each scale has a dark spot at the base; vertical fins have darkish colors, the others more or less hyaline. A blotch was also found at the end of the lateral line. All of these characters were found in every specimen collected from Lembung River, Madura Island (Fig. 2).



Figure 2 Specimen of *Cyclocheilichthys apogon* captured on 23 March 2019 from Lembung River, Madura Island

Distribution

The discovery of *C. apogon* in the Lembung River, Madura Island, is the first record of this species beyond its type locality (mainland Java: Batavia, Buitenzorg, Ngawi, Surabaya and Pasuruan) (Weber & de Beaufort, 1916), and represents the easterly extension of its previously known distribution that is about 150 km away (Fig. 3).

This new record of native species *Cyclocheilichthys apogon* in the Lembung River, Madura Island, which is its first outside mainland Java is an important contribution in understanding species diversity and biogeography (Souto-Santos 2019). This new record of *C. apogon* has improved one's knowledge and understanding of the species particularly on its extended distribution range toward further northeast.

Several studies on Indonesian freshwater fishes were focused on single rivers. *Crossocheilus obscurus* was recorded in Sumatra (Tan & Kottelat 2009), and on Batang Hari Basin (Tan & Kottelat, 2008). *C. obscurus* also observed on Musi Basin where the distance between the location of the first and the second recording was more than 250 km (Iqbal *et al.* (2017). The presence of *C. apogon* on Madura Island is probably due to the previous connection of Lembung River to East Sunda River during the last glacial era (Hanebuth *et al.* 2000; Sathiamurthy & Voris 2006). The connection was then being cut off and Lembung River became isolated due to rising sea levels. Besides geological factors, the spread of freshwater fishes outside the mainland could occur due to human induced factors.

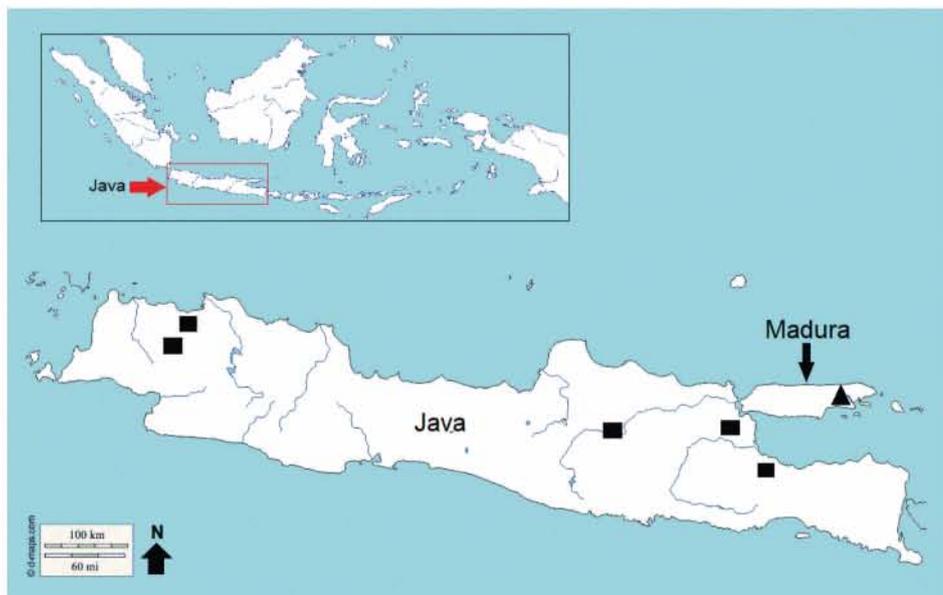


Figure 3 Known distribution of *Cyclocheilichthys apogon*. Black square are the previous records of the species based on Weber and de Beaufort's (1916) observation, mainland Java. The Black triangle is the recent record on Lembung River, Madura Island

CONCLUSION

Cyclocheilichthys apogon is a Southeast Asian native freshwater fish that is not only found in mainland Java, but also in the island of Madura which is at the eastern end of Java. The existence of *C. apogon* in such a remote area is an added information on the distribution of freshwater fishes in Indonesia.

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