

## Presence of Asian catfish *Clarias batrachus* (Siluriformes, Clariidae) in Madura Island, Indonesia

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**Abstract.** *Clarias batrachus* (Linnaeus, 1758) was a species that its condition faced the risk of extinction in most parts the Java mainland due to the African catfish *Clarias gariepinus* (Burchell, 1822) culture industry. In September 2018, *C. batrachus* was captured and photographed in the Saroka River, Madura Island, east and of Java mainland. The morphological characters of this species confirm its presence in a new river, more than 150 km northeast from its type locality. The specimens of *C. batrachus* were characterized as follows: dorsal fin rays 60-66; anal fin rays 47-50; pectoral fin rays 9-11; ventral fin rays 6.

**Key Words:** walking catfish, distribution, native fish, freshwater fish.

**Introduction.** Indonesia archipelago, Malay Paninsula and Indochina are still connected as a broad land called Sundaland at last glacial era (Sathiamurthy & Voris 2006). In the region there are many large rivers that are connected to each other from Southeast Asia to the Java Sea (Voris 2000). As a consequence of the raised sea level (Andaman Sea, South China Sea and Java Sea), Sundaland was divided into several archipelago (Hanebuth et al 2000). This has resulted in the spread of several freshwater fish which were isolated due to geological changes (van Bemmelen 1949).

One of the native species on Sundaland is the Asian catfish *Clarias batrachus* (Linnaeus 1758). *C. batrachus* is one of the 48 species of catfish family Clariidae in the world (Ng 2004). After the last glacial era, *C. batrachus* was spread in Southeast Asia and Indonesia Archipelago (Roberts 1993; Kottelat 2001). The introduction of African catfish *Clarias gariepinus* (Burchell, 1822) into Indonesia was between 1986 and 1989 (Cambray 2005), which caused *C. batrachus* to be threatened in many its habitats (Hossain et al 2006), including on Java. In this paper, we report the presence of *C. batrachus* on Saroka River, Madura Island, east end of Java mainland, which increases knowledge of the previously known distribution range of this species.

## Material and Method

**The fish sampling and description of the study sites.** Eight specimens of *C. batrachus* were obtained from a local fisherman during a fieldwork carried out on 22-23 March, 2019 in the Saroka River (7°02'21"S, 113°46'35"E) (Figure 1). Administratively, the site is located in Sumenep Regency, Madura Island, Indonesia. The fishing gear used by the fisherman was a medium hook and the used bait were earthworms (Stein et al 2012).



Figure 1. Saroka River, the fishing site of *Clarias batrachus* (original).

**Fish identification.** In order to ensure the validity of the species, the fin radius and morphological characters analysis of *C. batrachus* was carried out based on Weber & de Beafort (1913).

## Results and Discussion

**First record.** The 8 live specimens of *C. batrachus* had a total length between 18.8 and 25.3 cm. Two of them were used as preserved specimens in 10% formalin (Hasan et al 2019) solution and deposited at the Zoology Laboratroy, Generasi Biologi Indonesia Foundation (GBI00022) (Figure 2).



Figure 2. Specimen of *Clarias batrachus* GBI00022 captured on 23 March 2019 in Saroka River, Madura Island (original).

The remained six individuals were kept as livestock at the Fish Reproduction Laboratory, Brawijaya University, Malang Indonesia. The six live individuals were transported in styrofoam box with aerator.

**Diagnosis.** *C. batrachus* is distinguished from the other species, having transverse rows of light spots along the sides of the body. Other specific morphological characters are as follows: dark above, belly and underside of the head is light in color; maxillary barbels at least to middle of pectorals, a little shorter mandibular barbels pectorals; nasal barbels extend to occipital fontanel, equal to mental barbels. Spine more or less denticulated and it has same length or longer than the postorbital part of the head. Ventrals rounded, extending on anal. All of these characters were found in specimen of *C. batrachus* from Saroka River, Madura Island. In the present study, fin radius variation of specimens was detected (Table 1).

Table 1

Comparison of fin radius of *Clarias batrachus* from Saroka River, Madura Island with *C. batrachus* from the study of Weber & de Beaufort (1913)

Parameter	Saroka River	Weber & de Beaufort (1913)
	Min-Max	Min-Max
Dorsal fin rays	62-64	60-76
Anal fin rays	47-48	47-58
Pectoral fin rays	10-11	9-12
Ventral fin rays	6	6

**Distribution on Java.** West Java: Batavia, Bekasi, Buitenzorg, Serang, Cianjur, Cipanas, Bandung, Cirebon. Central Java: Samarang, Ambarawa, Wonosobo. East Java: Ngantang, Grati, Malang, Tulungagung, Jember (Weber & de Beaufort 1913; Ng and Kottelat 2008). Saroka River, Sumenep Regency, Madura Island is the first record of this species beyond its type locality and represents the easterly extension of previously known distribution about 170 km (Figure 3).

*C. batrachus* still exists on Madura Island because there is no record of *C. gariiepinus* intensive culture in the region. The introduction of *C. gariiepinus* to mainland of Java made many native freshwater fish threatened because the entry of new competitor and one of the potentially eliminated species was *C. batrachus*. Having the same space and type of food made *C. batrachus* which was smaller than *C. gariiepinus* unable to compete (Britton et al 2007). *C. batrachus* had a unique spawning habit, in which males and females would pair up, made nests and treated their fry, whereas *C. gariiepinus* could spawn without choosing pairs and produce more fry (Thakur 1976).

For a native fish, new records are important contributions for understanding the species biogeography (Iqbal et al 2017). The present study new record of *C. batrachus* reported in Madura Island, has helped to improve the knowledge of the species as it extends the distribution range of the species further east. The presence of *C. batrachus* on Madura Island could be caused by the fact that Madura Island was being connected to Sundaland at last glacial era, then being cut off and isolated due to rising sea levels (Hall 2013).

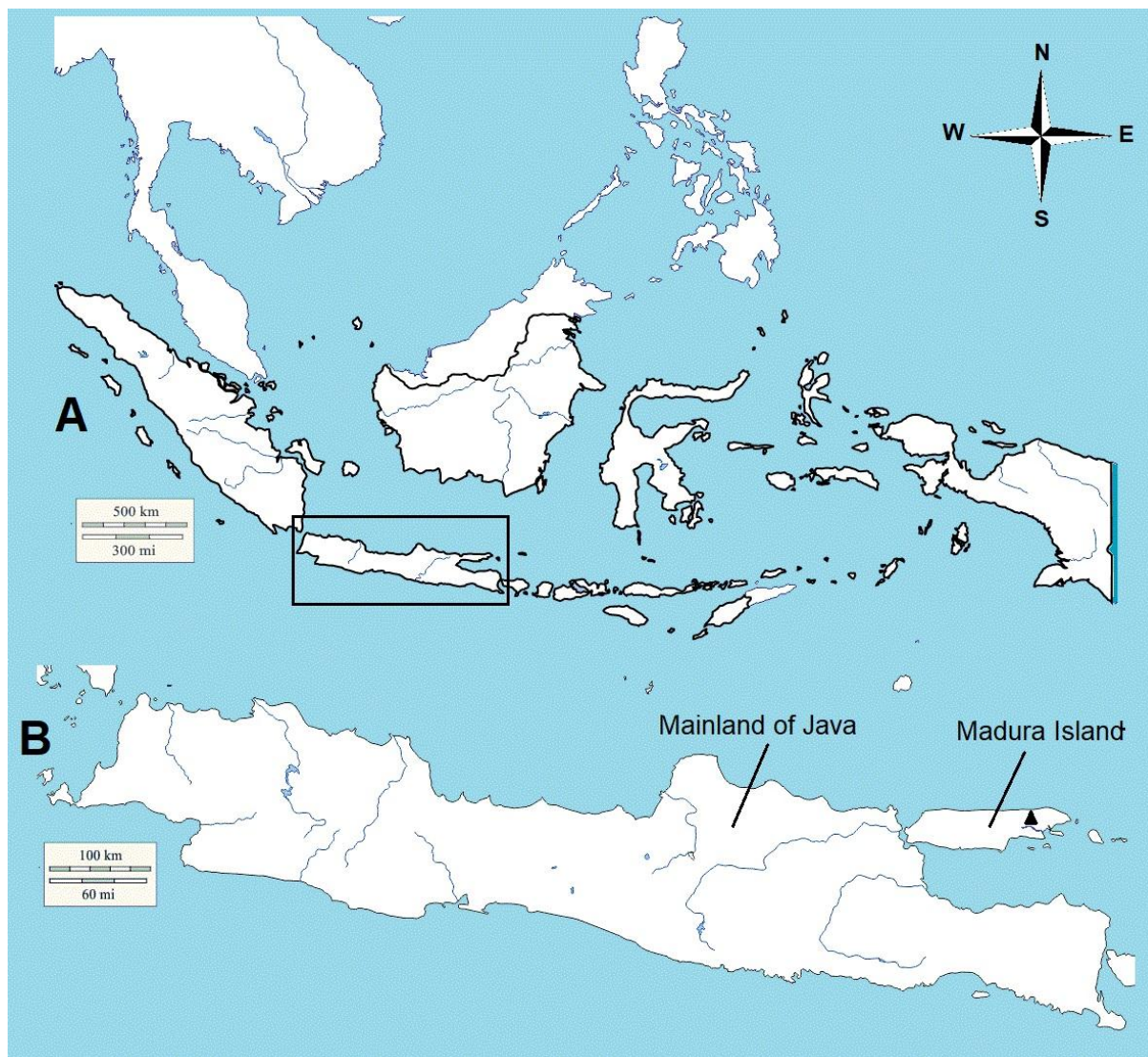


Figure 3. A. Location of Java in Indonesia. B. Known distribution of *Clarias batrachus*. Java mainland = type locality; Madura Island = additional locality; black triangle = Saroka River, Sumenep Regency.

**Conclusions.** *C. batrachus* is a native catfish that is not only spread in the Java mainland, but this species also exists in the Madura Island which extends the distribution about 170 km from its type locality. The existence of *C. batrachus* in a remote area was added to the data on the distribution of freshwater fish in Indonesia.

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