

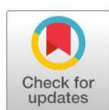
***Clarias batrachus* linnaeus, 1758 (siluriformes, clariidae): new records of threatened catfish from Bawean Island, Indonesia**

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Abstract

Clarias batrachus Linnaeus, 1758 is one of the catfish in Indonesia. The spread of *Clarias batrachus* in Indonesia generally in the mainland of Sumatra, Borneo, and Java. In 2019 we reported for the first time the presence of *C. batrachus* on Bawean, a small, isolated island, conservation area in the middle of the Java Sea. A description of the morphological characters of a specimen is provided. Presence of *C. batrachus* on Bawean Island was caused by geographical reason and human introduction factors.

Keywords: Asian catfish, distribution, rare fish

Introduction

The East Sunda River ran east across what is now the Java Sea to enter the north of Bali. This system included virtually all the present-day rivers of the south coast of Borneo, the north coast of Java, and the northern portion of the east coast of Sumatra¹, where many large rivers were connected from the South China Sea to the Java Sea. Major rises in sea level at that time in the South China Sea and the Java Sea divided Sundaland into several archipelagos². This geographical change has resulted in the isolation of several freshwater fishes, one of which was the *Clarias batrachus* Linnaeus, 1758³. As mention by Lee & Sulaiman¹⁹, spread of *C. batrachus* in the Southeast Asia was hypothesised originally from the Central Asia in 15 MYA. Base on Noakes and Bouvier's study⁴, this species was categorized as a threatened fish.

In Indonesia, *Clarias batrachus* ranged widely in the rivers and wetlands of Mainland Western Indonesia Islands (Sumatra, Borneo and Java)⁵. In this paper, we report the presence of *C. batrachus* in the river, Bawean Island, which increases knowledge of the previously known distribution range of this species.

Materials and methods

We collected specimens of *Clarias batrachus* using fishing gear on 24–25 May 2019 in a river that supplies rice fields. Administratively, the site is located in Pekalongan Village, Gresik Regency, East Java Province, Indonesia. The fishing gear used by the angler was a medium hook with bottom and the bait used was worms⁶. The specimen was identified following Weber and de Beaufort⁷.



Results

New records. (Figs 1, 2). Indonesia: Java Sea: Bawean: downstream of the river ($5^{\circ}44'18''\text{S}$, $112^{\circ}39'17''\text{E}$), upstream of the river ($5^{\circ}45'03''\text{S}$ $112^{\circ}40'33''\text{E}$), 24–25 2019, collected by V. Hasan (6 specimens, total length 12–32 cm, photographed). 2 preserved specimens were labeled and fixed in 96%⁸ formalin solution and deposited at the Zoology Laboratory, Universitas Muhammadiyah Lamongan, Indonesia (BUML0031). The remaining 4 live specimens were kept as livestock at the Fish Reproduction Laboratory, Universitas Brawijaya, Malang Indonesia. The live individuals were transported in polyethylene bags with oxygen⁹.

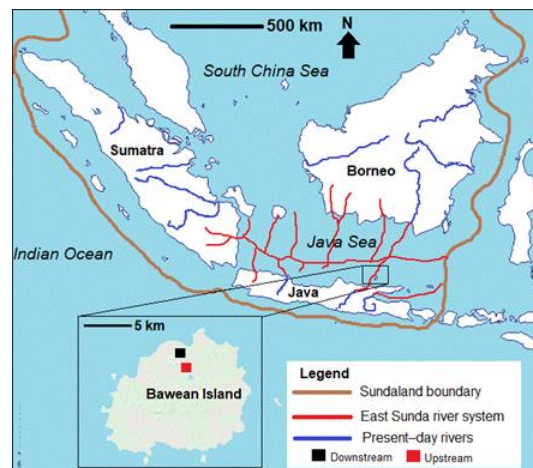


Figure 1. Known distribution of *Clarias batrachus*: Java, Borneo and Sumatra (type locality); Bawean Island (additional locality).



Figure 2. River, location where *Clarias batrachus* was found on Bawean Island.

Discussion

Several specimens collected on Bawean Island were identified as *Clarias batrachus* (Figs. 3). *Clarias batrachus* have transverse rows of light spots along the sides of the body and tail as the special character. Other specific morphological characters are as follows: Dark above, belly and underside of head light; Eye distance greater than mouth opening, less than twice in the head. Maxillary barbels at least to the middle of pectorals, a little shorter mandibular barbels pectorals; nasal barbels extend to occipital fontanel, equal to mental barbels. Their spine is more or less denticulated and it has the same length or longer than the postorbital part of the head.

Record of *Clarias batrachus* on Bawean Island is the first record of this species in the middle of the Java Sea. For a threatened species, new records are important contributions for understanding biogeography, among other biological topics^{10,11}. As reported in this paper, the new record of *C. batrachus* helped to improve the knowledge of the species as it extends the distribution range of the species to the remote area. In East Java these species have been recorded at the East Java: Ngantang, Grati, Malang, Tulungagung, Jember^{7,3}, also new recorded at Saroka River¹² and Angon-angon village¹⁸, Madura Island. The discovery of *C. batrachus* on Bawean Island could be caused by the Bawean (north coast of Java) was being connected to East Sunda River at last glacial era then being cut off and isolated due to rising sea levels^{13,14}. Besides geological factors, the spread of freshwater fishes outside the mainland could occur due to human introduction factors^{15,16}. Charan²⁰ stated that findings of *C. batrachus* in many rivers indicated highly spawning fecundity. However, it still need more observation in Bawean. The presence of *C. batracus* in Bawean Island tends not to cause concern because this species is a native, it is different from *O. niloticus* which has potential as an invasive species¹⁷.



Figure 3. Fixed specimen of *Clarias batrachus* found in Bawean Island in the Java Sea.

Conclusions

The discovery of *C. batracus* in Bawean island added to the data on the distribution of this species in a remote area. The existence of *C. batracus* in Bawean is presumably caused by geological and human-introduced factors.

Acknowledgments

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Conflicts of Interest

There are not potential conflicts of interest.

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