

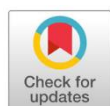
# *Clarias batrachus* Linnaeus, 1758 (Siluriformes, Clariidae): new records of threatened catfish from Bawean island, Indonesia

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## Abstract

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



**Keywords:** Asian catfish, distributon, rare fish

## Introduction

The East Sunda River ran east across what is now the Java Sea to enter in the north of Bali. This system included virtually all the present-day rivers of the the south coast of Borneo, north coast of Java and the northern portion of the east coast of Sumatra<sup>1</sup>, where many large rivers were connected to each other from South China Sea to the Java Sea. Major rises in sea level at that time in the South China Sea and Java Sea divided Sundaland into several archipelagos<sup>2</sup>. This geographical change has resulted in the isolation of several freshwater fishes, one of which was the *Clarias batrachus* Linnaeus, 1758<sup>3</sup>. Base on Noakes and Bouvier study<sup>4</sup>, this species was categorized as a threatened fish.

In Indonesia, *Clarias batrachus* ranged widely in the rivers and wetlands Mainland Western Indonesia Islands (Sumatra, Borneo and Java)<sup>5</sup>. 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.

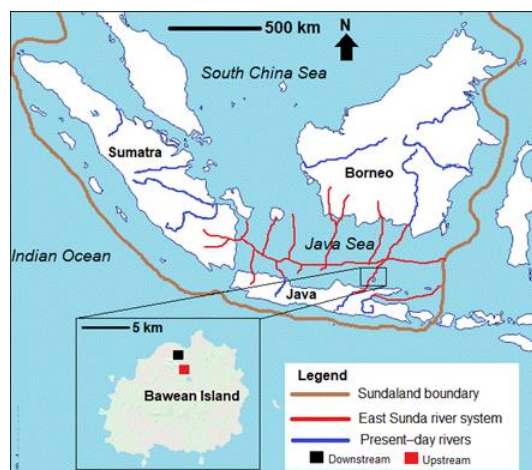
## Materials and methods

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 bait used were worms<sup>6</sup>. The specimen were identified following Weber and de Beaufort<sup>7</sup>.

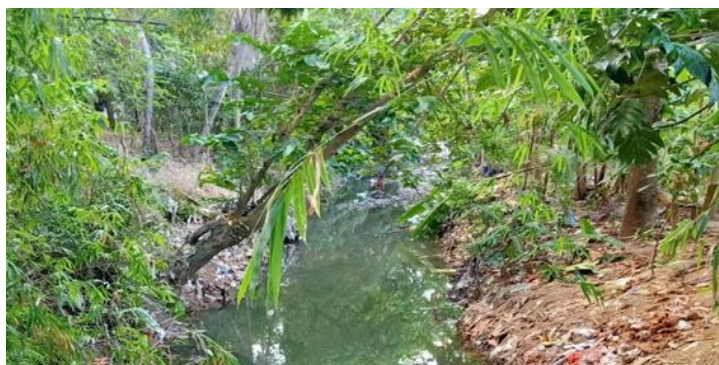


## Results

**New records.** (Figs 1, 2). Indonesia: Java Sea: Bawean: downstream of river ( $5^{\circ}44'18''S$ ,  $112^{\circ}39'17''E$ ), upstream of river ( $5^{\circ}45'03''S$   $112^{\circ}40'33''E$ , 24–25 2019, collected by V. Hasan (6 specimens, total length 12–32 cm, photographed). 2 preserved specimens were labelled and fixed in 96% formalin solution and deposited at the Zoology Laboratory, Generasi Biologi Indonesia, Gresik, Indonesia (GBI0031). 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 oxygen.



**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 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 head. Maxillary barbels at least to middle of pectorals, a little shorter mandibular barbels pectorals; nasal barbels extend to occipital fontanel, equal to mental barbels. Their spine more or less denticulated and it has 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 middle of the Java Sea. For a threatened species, new records are important contributions for understanding biogeography, among other biological topics<sup>10,11</sup>. 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 remote area. In East Java this species have been recorded at East Java: Ngantang, Grati, Malang, Tulungagung, Jember<sup>7,3</sup> and also new recorded at Saroka River, Madura Island<sup>12</sup>. 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<sup>13,14</sup>. Besides geological factors, the spread of freshwater fishes outside the mainland could occur due to human introduction factors<sup>15,16</sup>. Presence of *C. batracus* in Bawean Island tends not to cause concern because this species is a native, it is different with *O. niloticus* which has potential as invasive species<sup>17</sup>.



**Figure 3.** Fixed specimen of *Clarias batrachus* (GBI.Cb.V.2019) found in Bawean Island (Indonesia) 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 presumably caused by geological and human introduced factor.

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## Conflicts of Interest

There are not potential conflicts of interest.

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