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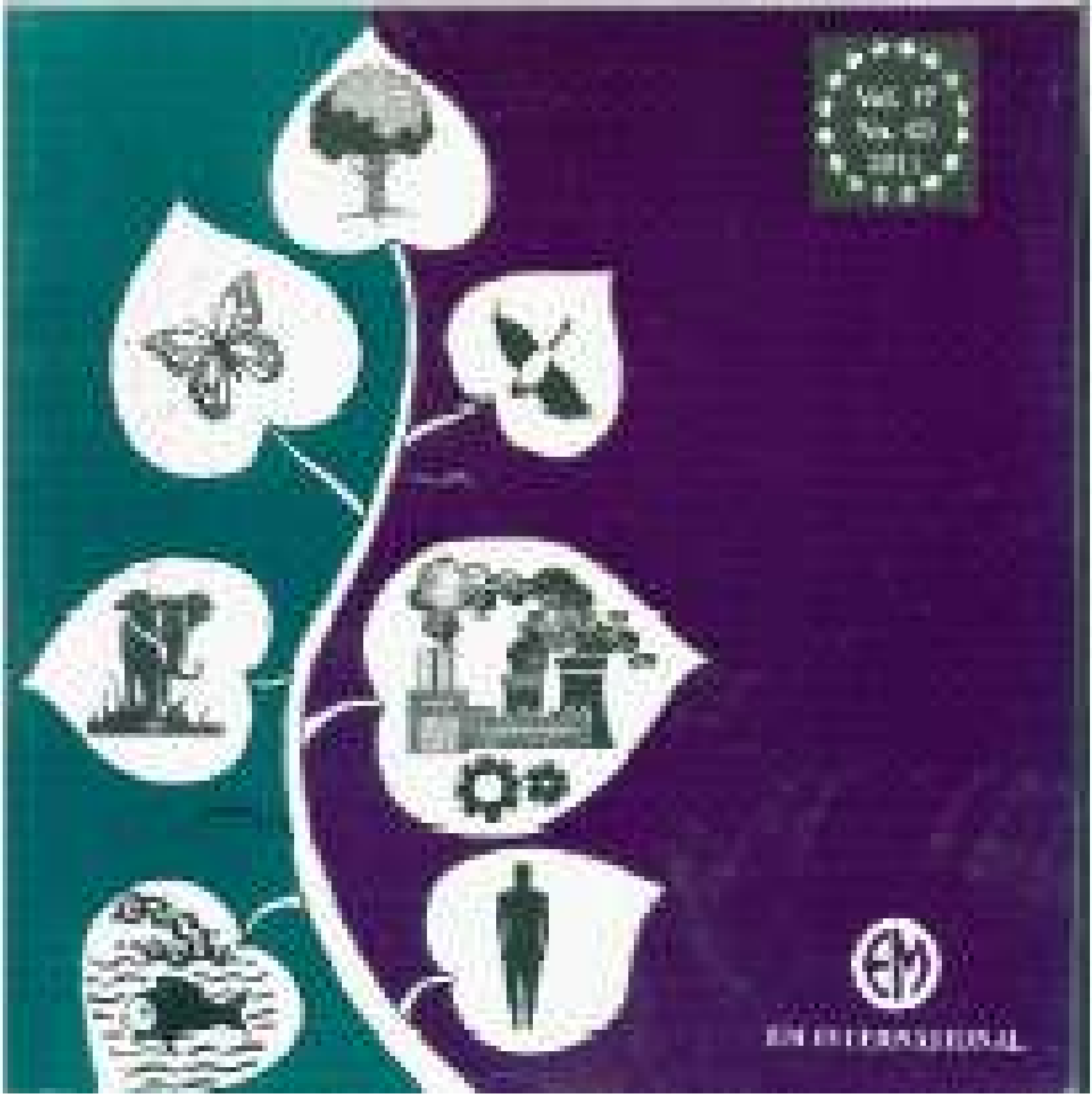

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Distribution of Dwarf Snakehead *Channa gachua* Hamilton, 1822 (Teleostei, Channidae) on Brantas River Basin, Indonesia

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ABSTRACT

Channa gachua Hamilton, 1822, a native freshwater predator fish in family channidae, is known from South Asia to Western Indonesia archipelago. We provide a brief description of contemporary distribution records of this species in the Brantas river basin, one of the widest rivers basin in Java. The specimens of *C. gachua* were characterized as follows: dorsal fin rays 33-35; ventral fin rays 6; pectoral fin rays 15-16; anal fin rays 22-24. A description of detailed morphological characters of a live specimen are provided.

Key words: *Distribution, Freshwater fish, Java, Predator fish*

Introduction

Channa is a genus of freshwater fish that is widespread in Southeast Asia (Kottelat *et al*., 1993). One of the native species *Channa* in the Western Indonesia archipelago is Dwarf Snakehead *Channa gachua* Hamilton, 1822 (Robert, 1993; Kottelat, 2013). *Channa gachua* were used as a raw material for medicine (Mustafa *et al*., 2012) and ornamental fish (Talwar and Jhingran, 1992).

Especially in Java, *Channa gachua* was spread in the Brantas river basin, East Java province (Weber and de Beaufort, 1916; Hariati *et al*., 2019). However, the presence of *Channa gachua* in the all part of Brantas river basin has not been recorded. The purpose of this study is to provide information about contemporary distribution records of *C. gachua* in Brantas river basin, East Java province.

Materials and Methods

The fish sampling and description of the study sites

We conducted a random sampling survey of the fish diversity in all parts of the Brantas river basin. In the upstream (Malang and Blitar regency), midstream (Tulungagung, Kediri, Jombang and Mojokerto regency) and downstream of (Sidoarjo regency and Surabaya City) (Fig. 1). Live specimens of *C. gachua* were obtained from a local people during a fieldwork carried out on 5 January-16 May, 2019. We collected specimens of *C.gachua* from local fishermen who used traditional fish traps, landing nets and small hook (Stein *et al*., 2012).

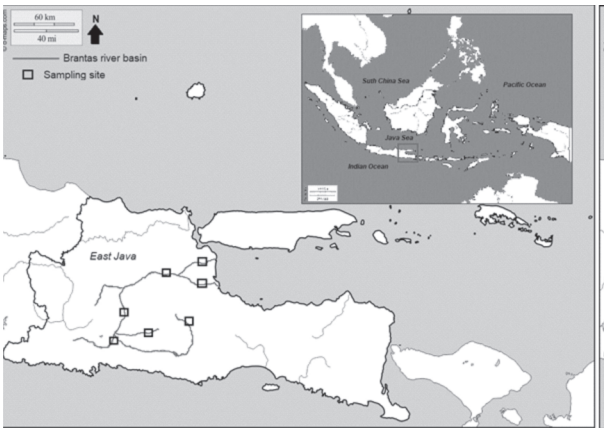

Fig. 1. Sampling site and map of Brantas river basin.

Fish identification

In order to ensure the validity of the species, the morphological characters analysis of *Channa gachua* was carried out based on Weber and de Beaufort (1922) and Roberts (1993).

Results

Specimens collection

The Fifty four (54) specimens of *Channa gachua* had a total length between 8 and 28 cm . Six (6) of them were labeled and fixed in 96% ethanol (Hasan *et al.*, 2019a) and deposited at the Hydrobiology Laboratory, Universitas Brawijaya, Malang, Indonesia (LH.0001) (Fig. 2). The remaining forty eight (48) were kept as livestock at the Fish Reproduction Laboratory, Brawijaya University, Malang Indonesia (Fig. 3).

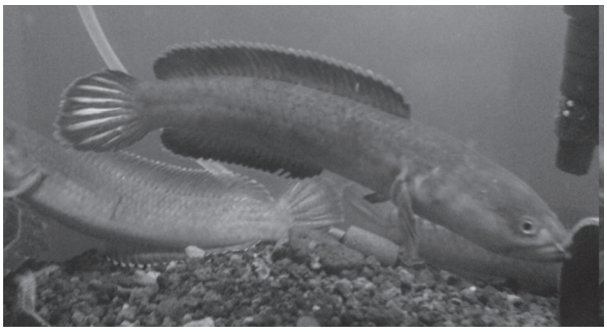

Fig. 2. Live Stock of *Channa gachua* captured from Brantas river basin, East Java.

Identification

Detailed morphological characters are as follows:

Fig. 3. Preserve specimen of *Channa gachua* (LH.0001)

Body compressed posteriorly; Head depressed, flatabove, its upper profile sloping down in a nearly straight line; Tip of snout in the horizontal through middle or upper part of eye; Dorsal beginning behind origin of pectorals and ending behind anal; Pectorals more or less than postorbital part of head; Ventrals originating before origin of dorsal, about half as long as pectorals. Colour in live specimen: body brownish, above, lighter below, with traces of darker crossbars; Dorsal, caudal and anal with a white margin, the rest of the fins uniformly blue or green; Pectorals black at the base, the black area bordered behind by a white band; Ventrals hyaline, with a dusky streak. All of these characters were found in specimens of *Channa* from the Brantas river basin, East Java province.

Distribution

As for the distribution of *Channa gachua*, the species was found to be distributed in the Brantas river basin of both the upstream and midstream, but not found in downstream. *Channa gachua* is more available in the upstream than midstream. During sampling, we have obtained 49 specimens in the upstream, whereas in the midstream 5 specimens (Table 1).

The distribution of *C. gachua* in uppstream and midstream could be due to topography and several water quality parameters. The conditions of upstream and midstream Brantas river basin is dominated by water spring, clear, shallow and rocky so that the condition is more suitable for *C. gachua* habitat (Figs. 4) (Lee and Ng, 1991; Pethiyagoda, 1991; Baensch *et al.*, 1991) compared to the downstream that dominated by murky waters, deep and muddy. Besides that there is a predatory competition segmentation factor in Brantas river basin. In the upper reaches of the river *C. gachua* dominates as the top predator (Lee and Ng, 1994). While in the midstream and downstream there are other predators that are more dominant such as *Channa striata*, *Hemibagrus nemurus* and *Hampa macrolepidota*.

However, need more extensive research on the current conditions of the distribution of *C. gachua* in

Table 1. Location of *Channa gachua* was found in Brantas river basin

No	Name of location	Position	Number	Coordinate
1	Sumber brantas	Upstream	33	7°48′28"S; 112°31′55"E
2	Konto river	Upstream	16	7°50′20"S; 112°22′09"E
3	Brantas river	Middle stream	5	8°04′29"S; 111°52′53"E
4	Rolak Songo dam	Middle stream	-	7°26′42"S; 112°27′55"E
5	Porong river	Downstream	-	7°32′43"S; 112°43′17"E
6	Mas river	Downstream	-	7°18′32"S; 112°42′44"E

Fig. 4. Upstream of Brantas river basin, one of the ideal habitats for *Channa gachua.*

the Java, which was a further distance main rivers such as Bengawan Solo river basin (other river basin in East Java), Serayu river basin (Central Java) and Citarum river basin (West Java). For a native fish, distribution records are important contributions for understanding species diversity and biogeography (Iqbal *et al*., 2017; Hasan *et al*., 2019b; Valen *et al*., 2020).

Conclusion

Channa gachua is an Indonesia native fish that is spread on the all part of Brantas river basin except in downstream not found. It is posible that the environment quality, food and niche competition affects the distribution of *C. gachua*. The distribution records of *C. gachua* in the Brantas river basin added to the data on the distribution of native fish in Indonesia, especially in Java.

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