

GENETIC DIFFERENTIATION OF THE KAMPAR RIVER'S GIANT FEATHERBACK (*Chitala lopis* BLEEKER 1851) BASE ON MITOCHONDRIAL DNA ANALYSIS

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ABSTRACT

Although the giant featherback *Chitala lopis* is an important fish in Kampar River, the population structure has not been investigated. In this study, genetic diversity and population structure of giant featherback were examined using nucleotide sequence analysis of mitochondrial DNA control region for 54 fish collected from Kampar River. As a comparison, samples from Barito River (South Kalimantan Province), Penyak River (Bangka-Belitung Province), and Indragiri Hilir (Riau Province) were also used in this analysis. The Kuala Tolam (lower reaches of Kampar River) samples had higher nucleotide diversity (δ) (0.0033) than Kutopanjang Reservoir (0.0011) and Teso (0.00) (upper reaches of Kampar River), the nucleotide diversity all samples varied from 0.000-0.0033. The genetic differentiation and genetic structure among Kampar River's giant featherback were also supported by pairwise F-statistic value and hierarchical analysis of molecular variance, indicating that the Kuala Tolam population is genetically isolated from the population in upper reaches of Kampar River.

KEYWORDS: giant featherback, control region, mitochondrial DNA, genetic variation, Kampar River

INTRODUCTION

Indonesian giant featherback is a member of Notopteridae family (Kottelat *et al.*, 1993; 1997), which has economic value and culture. This fish is very popular because its meat has delicious taste and distinctive primarily because of high fat content (Sunarno, 2002), as well as protein content and high vitamin A (MnO, 2005), placing giant featherback as exclusive and expensive freshwater fish with enough price (more than Rp.50 000/kg). As an illustration, the demand for giant featherback homemade industry of about 200 kg/day and used for ornamental fish and the consumption of 40 kg/day. While fishermen just only supply less than 2% (Anonymous, 2003).

Giant featherback fish production decreased due to the fishing activities for consumption and ornamental fish uses. Giant featherback annual production has been declined, both at the national level (8,000 tonnes (1991), 5,000 tons (1995), and 3,000 tons (1998) (Directorate General of Fisheries, 2000)), and regionally (Sungai Kampar, Province Riau). The annual production of giant featherback in the Kampar River has been decreased, from 50.2 tons (in 2003) to 7.6 tons in 2007 (Agency of Marine and Fisheries, 2008). This condition seems to be continued since the demand of this fish is continuously for human need. Consequently, the giant featherback species would be endangered, while few information is available on the genetic variation and population differences among giant featherback populations.

Actually, almost all genetic studies of giant featherback were based on morphological characteristics (Sunarno *et al.*, 2007; Wibowo, 2008a) with the exception of Madang (1999) and Wibowo (2008b), which simply studying giant featherback genetic. There were no researches related to the variation of giant featherback populations in large geographic areas (along river), a more detailed level, sequense DNA.

Knowledge of genetic population is important in planning and implementing appropriate management strategies for the giant fetaherback that is more and more endangered. Furthermore, efforts regarding to reduce pressures on natural populations through domestication and increase production through selective breeding, the basic information related to genetic conditions of this species is necessary. Here, the genetic differences in geography are analyzed to provide a clear picture of the structure of giantfeatherback populations in Kampar River, Riau Province. The results can provide important biological information as basic information, necessary to plan proper policy and management of giant featherback in the Kampar River.

MATERIALS AND METHODS

Fish Samples

Total of 51 individuals were collected from five locations in Kampar River, details of each location

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