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Longitudinal Distribution and Population Structure Rasbora Lateristriata Bleeker, 1854 (Osteichthyes: Cyprinidae) in Sungai River

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Hari / Tanggal : Rabu, 24 April 2019

Waktu : 09.00-13.00 WIB

Tempat : Daring (Zoom Meeting)

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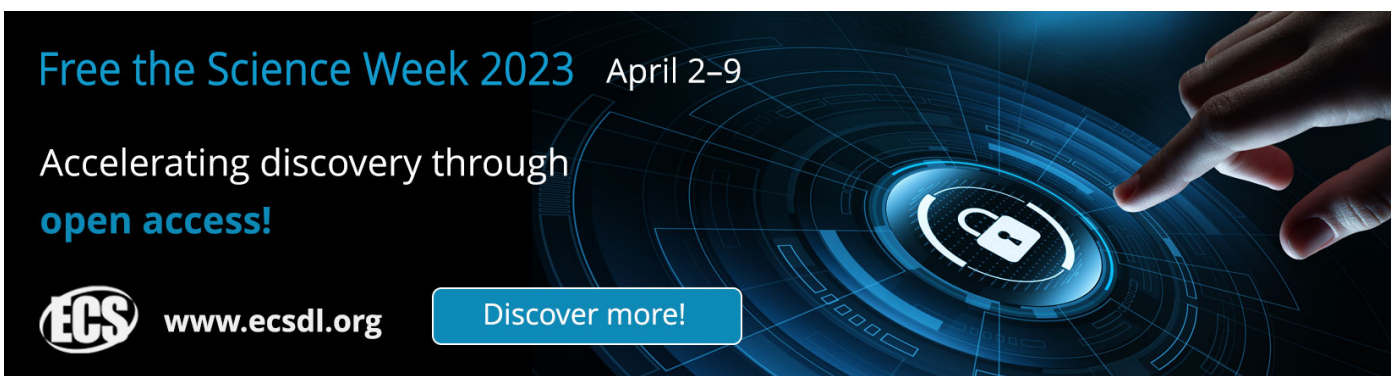
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Longitudinal distribution and population structure *Rasbora lateristriata* bleeker, 1854 (osteichthyes: cyprinidae) in Sungi River

S A M P Suryani*, I W Arya and I M Kawan

Aquatic Resource Management Faculty of Agriculture, University Warmadewa,
Denpasar, Bali, Indonesia

*suryanip@rocketmail.com

Abstract. Genus *Rasbora* is a freshwater fish belonging to the Cyprinidae familia distributed covering the Asian region, especially in Southeast Asia. There are 90 species of fish *Rasbora* scattered around the world where 56 species distributed in Indonesia and three species are endemic to Indonesia. *Rasbora* fish used as an alternative source of protein because protein is high at 33.4 g / 100 g. *Rasbora* has higher protein content than the protein content of carp and milkfish, *Rasbora* also contain high fluorine and contains omega3. This study aimed to describe the longitudinal distribution and population structure *Rasbora lateristriata* in the Sungi River, Tabanan. Analysis of population structure based on weight and the total length, determine the interaction between physical and chemical factors with an abundance of *Rasbora lateristriata*. This study is using survey method with purposive random sampling. This study uses three stations by topography and environment, namely the upstream, midstream and downstream. *Rasbora* species diversity and abundance will be calculated by cluster analysis, longitudinal distribution and population structure will be explained descriptively. The interaction between physical factors with an abundance of *Rasbora* will be analysed by principal component analysis. In the current study found *Rasbora lateristriata* with 85 individual species and distributed longitudinally along the river Sungi on the upstream is 14 individuals, middle stream is 34 individuals and downstream 47 individuals. *Lateristriata* *Rasbora* weight ranging from one point three to six grams, the total length ranges from four to seven point five cm. *Rasbora lateristriata* distribution is affected by the DO, temperature, TSS and BOD. The existence of *Rasbora lateristriata* influenced by light intensity and depth.

1. Introduction

Rasbora is difficult to find at polluted river especially in downstream and these fish usually live at depths of less than 1 meter [1]. *Rasbora* is a fish that live clustered or schooling fish [2]. The downstream is central to deposit organic and inorganic materials that are stored in the bottom waters and site decomposition [3]. The upstream of the area had the ingredients of organic and inorganic derived from upland. The middle part of the river is a transport zone which distributes organic material on to downstream.

Sungi River is one of the ten rivers to contamination with chemical substances. Pollutant parameters that have exceeded the quality standard that is BOD, COD, Total Phosphate, Total coliform and faecal coliform where these parameters are important because the river Sungi for drinking water at Tabanan Regency [4]. Activities at Sungi River is dominated by agricultural activities, settlements farms and



industrial in the downstream areas. Waste from these activities made disturbance of water quality can be shown as an increase in the content of BOD, COD, total coliform and faecal coliform. Increased content of this occurs in the middle of the river and decreases in the downstream.

The purpose of this study was to analyse the structure of the population based on body weight, standard length, total length and determine the relationship between physical-chemical waters with an abundance of Wader fish in river Sungi, Tabanan. This study provides information on ecological especially *Rasbora* fish populations that can be used as a reference in conservation efforts, especially in the use of fish by communities around the river Sungi.

2. Methods

This study use *Rasbora sp* as objects and water samples are from the river Sungi. The fish in the catch with netfish. Samples collected in the upstream, midstream and downstream using 3 pieces nets with mesh size 1.25 x 1.25 cm; 1 x 1 cm; and 0.5 x 0.5 cm. Equipment used to measure the physical and chemical parameters is DO meter, pH meter, thermometer, GPS, scales and callipers.

The study was conducted by survey method and random purposive sampling technique Sungi River divided into 3 stations based on topography and environmental setting. Sampling fish at Sungi river will be divided into three regions are upstream, midstream, and downstream. On the upstream at 8° 21,45'S 115° 10,49'E, midstream at 8° 33,695'S 115 ° 09,538'E and downstream at 8° 38,053'S 115° 06,068'E measured by GPS.

Physical variables were observed by depth parameters, temperature, and substrate. Chemical variable to measure pH, DO, BOD, TSS. Biological variable to measure the population of plankton. Population structure was analysed by total weight, standard length, and total length. The abundance genus *Rasbora* counted the number of species per station from Sungi River. Species abundances calculated the number of individuals of each species per station. The relative abundance is abundance ratio of each species on the abundance of individuals of all species in a community [5,6].

3. Results and discussion

A total of 145 individuals *Rasbora* caught in this study, consisting of *Rasbora lateristriata* (Figure 1) and 85 individuals *Rasbora lateristriata*.



Figure 1. *Rasbora lateristriata*.

Population structure *R. lateristriata* based on body weight are presented in Figure 2. In the downstream found at the mostly *R. lateristriata* that weight 1to5 gr are 29 individuals. *R. lateristriata* have the highest weight in the middlestream with a total of 7 species and the weight of 11 to 15 gr is also present in the midstream.

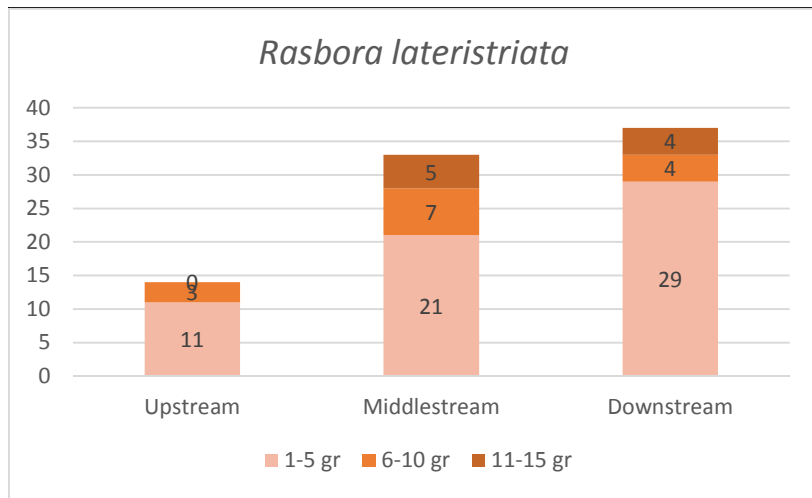


Figure 2. Population structure *R. lateristriata* based on body weight.

Population *R. lateristriata* with standard length (figure 3) 5 to 7.9 mostly in the downstream is 21 individual. Length central part of the total which at the downstream *R. lateristriata* has a length of 5 to 7.9 mostly in the downstream is 21 individuals. Based on the standard length and the total length of known structure *R. lateristriata* population is dominant in size from 5 to 7.9 in the Sungai River.

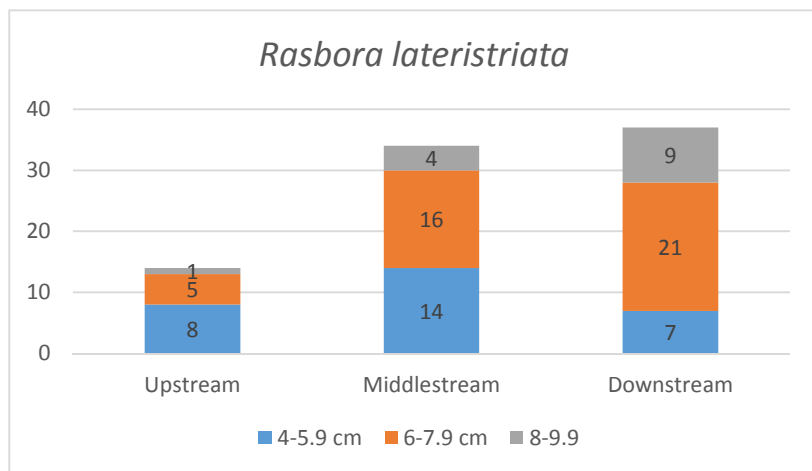


Figure 3. Population structure *R. lateristriata* based standard lengths.

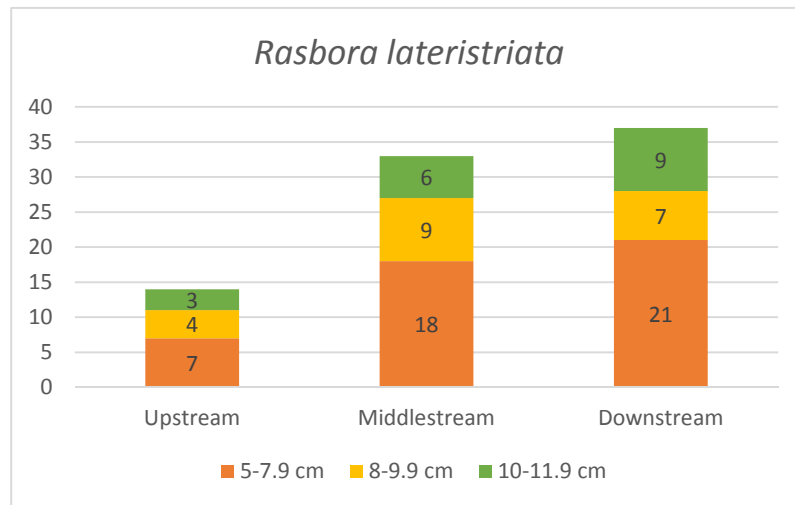


Figure 4. Population structure *R. lateristriata* based on the total length.

Distribution longitudinal of *Rasbora lateristriata* at Sungai River presented in figure 5. First sampling in the dry session in April and the second sampling in a wet session in June. Longitudinal distribution *R. lateristriata* distributed from upstream to downstream and highest in the downstream.

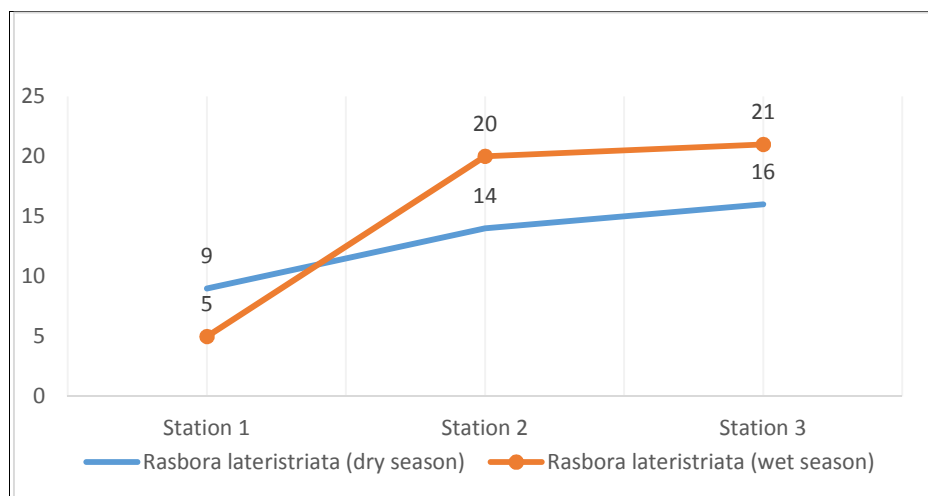


Figure 5. Longitudinal distribution *Rasbora lateristriata*.

The measurement of water quality in Sungai River showed in Table 1. Physical parameters are the depth and brightness is between 25 to 40 cm. The temperature of water ranges from 23 to 28 °C. Dissolved oxygen parameter is from 6.16 to 9.79 ppm, pH parameter is from 6.50 to 7.44 and BOD concentration is 1.2 to 3.12 ppm. Plankton populations lowest in the downstream is 1083 ind / l. Some water quality parameters have changed from upstream to downstream. This condition will be effective the Sungai river flows has received a wide range of organic materials as shown varying pH values and tends to sour on the upstream and downstream bases. But this pH value can still be tolerated by the fish life is 4 to 11. *R. lateristriata* found in the middle of its oxygen content ranges 6.10 to 7.08 ppm.

Table 1. Results of the physical-chemical parameter in Sungai River.

The range of the physical parameter value chemical research station								
Station	Depth (cm)	Brightness (cm)	DO ppm	pH	Temperature ° C	TSS ppm	BOD ppm	plankton IDV / l
1	25-35	25-35	9.40 - 9.79	6.50 - 7.22	24.35-26.80	70	1.2	5190
2	25-35	30-35	6.10 - 7.08	7.32 - 7.55	27.05-28.20	82	3-12	2647
3	30-50	30-40	6.16 - 6.57	7.32 - 7.44	23.08-26.03	90	2.4	1083
The range	25-50	25-40	6.16-9.79	6.50 - 7.44	23.08-28.20	70-90	1.2-3.12	1083-5190

4. Conclusion

Rasbora lateristriata mostly find in the midstream and downstream of the river. Longitudinal distribution *R lateristriata* distributed in upstream to downstream but highest distribution at downstream in a wet session. Distribution and population structure *R. lateristriata* more influenced by chemical factors such as pH, DO, BOD, TSS, and population of plankton.

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