

## I. INTRODUCTION

### A. Background

*Fejervarya cancrivora* known as ricefield frog (Iskandar, 1998) is one of Dicroglossidae family. Main character of *F. cancrivora* are large size, have small glandular warts on the sides of head, has interrupted dorsolateral folds on the backs while the ventral surfaces are smooth (Dubois and Ohler, 2000). Tympanum is distinct, no parotoid glands (Yodthong *et al.*, 2019). Colour varies from brown, greenish-brown to gray with irregular dark scattered bars on the lips and hindlimbs (McKay, 2006).

*Fejervarya cancrivora* widely distributed on lowland and mangrove of South east Asia (Shao *et al.*, 2015). Frost (2007) reported that *F.cancrivora* widely distributed on Asian region , from Guangxi into northeast Hainan islands, China, to Vietnam include Andaman Island and India Nicobar Island, Thailand peninsula, Singapore, Greater Sunda, Philippine and Lesser Sunda to Flores. In Indonesia, *F.cancrivora* distribution involving Sumatra, Java, Borneo and Bali (Kuniawan *et al.*, 2014). Kuniawan *et al.* (2010) reported *F.cancrivora* populations in Asian region can distinguish into three types, there are mangrove type, large type and Pelabuhan Ratu/Sulawesi type. Mangrove type population distributed in Asian continent and Philippine, large type population distributed in Sundaland while Pelabuhan Ratu/Sulawesi type population found in Ratu Harbor area and Sulawesi. Difference of area condition assumed as a factor caused variations in a species, morphologically and genetically.

Factors that caused the variation occur in a population are random mating, migration, mutation and geographic isolation (Ahluwalia, 2009). Based on topography, Sumatra Island located on 5 39' north latitud – 5 54' south latitud and 95 east longitud – 106 east longitud, and there is Barisan Mountain range present from north to south of the island (Anwar *et al.*, 1984). West Sumatra is a part of the Sumatra Island and geographically can be distinguish

into lowland area and mountain range area which has various elevation from 0-3000 masl (Pemerintah Provinsi Sumatera Barat, 2018). Funk *et al.* (2005) reported that genetic variation on *Rana luteivensis* (Anura: Ranidae) populations in Columbia is low because of low gene drift caused by mountain present as a barrier. The existence of Hengduan mountain and Yunnan-Guizhou highland makes disturbance on gene flow and caused speciation, particularly on frogs and toads (Che *et al.*, 2010; Zhang *et al.*, 2010). The existence of Barisan mountain range assumed can be a geographic barrier for species distribution, include *F. cancrivora*.

Morphological variation known after morphometric measurement can be used as specific marker for a species. Shimada *et al.* (2011) proved there is difference of iris colour, tympanum size and relative limb length between two cryptic species *Merystogenis amoropalamus* (Anura: Ranidae). Borzée *et al.* (2013) reported there is significant difference at 19 characters among male *Hyla suweonensis* and *H. japonica* (Anura: Hylidae) that can be used as identification key. Addaha *et al.* (2015) reported there is high difference of morphologic variation on *Polypedates leucomystax* (Anura: Rhacophoridae) in West Sumatra. Ardila *et al.* (2017) reported about morphometric variation of *F. cancrivora* in Riau University with result about 18 character have significantly different. Nevertheless, molecular data needed to confirm the position of a species caused by several genera of Anura have similarity by morphology (Larson and Chippindale, 1993 : Ilić *et al.*, 2016).

Analysis of population genetic structure can be done by using molecular marker, one of them is Random Amplified Polymorphism DNA (RAPD) (Kimberling *et al.* 1996). RAPD method used by analyze DNA bands that formed as amplification result (Allendorf and Luikart, 2007). Several research related of using RAPD marker, done by Moslehi *et al.* (2015) reported there is high genetic variation on *Pelophylax ridibunda* (Anura: Ranidae) populations caused by range between the population quite far and there is difference of



environment factors. Hendri *et al.* (2019) reported genetic variation intra population *Limnonectes blythii* (Anura: Dicroglossidae) from Malampah, Harau and Sijunjung which geographically has an altitude of 300-700 meters above sea level (masl) and is a protected area in West Sumatra.

Based on the previous explanation, molecular marker RAPD and morphometric measurement can be used for *F.cancrivora* genetic variation analysis. So that there is a need for research to analyze morphology variation and genetic variation of *F.cancrivora* in West Sumatra.

## **B. Research Question**

Formulation of the problems on this research include :

1. How is the morphology variation of ricefield frog (*Fejervarya cancrivora*) in West Sumatra?
2. How is the genetic variation of ricefield frog (*Fejervarya cancrivora*) in West Sumatra based on RAPD technique?

## **C. Aim of the Study**

1. To analyze morphology variation of ricefield frog (*Fejervarya cancrivora*) in West Sumatra
2. To analyze genetic variation of ricefield frog (*Fejervarya cancrivora*) in West Sumatra based on RAPD technique

## **D. Significance of the Study**

The results of this study can add scientific data regarding the genetic diversity of Amphibians as well as become basic data in the conservation strategy of *F. cancrivora*.

