World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 5.088

THE ABUNDANCE OF MUD CRAB (*Scylla serrata* FORSKAL, 1775) IN SUNGAI PISANG MANGROVE FOREST, PADANG CITY, WEST SUMATRA, INDONESIA

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Article Received on 19/02/2018 **Article Revised on 12/03/2018** **Article Accepted on 03/04/2018**

ABSTRACT

Mud Crab (*Scylla serrata* Forskal 1775) is an animal that live in the mangrove forest region. This study aims to know and to analyze abundance the population of mud crab (*Scylla serrata* Forskal 1775) at the Sungai Pisang mangrove forest, Padang City, West Sumatera, Indonesia. This study has been done in May 2017. The methods was survey with taking sample purposively random sampling. There are three stations for fields were used, and each of station was placed randomly five unit traps in size 40 x 20 cm with fish head and chicken entrails for baits. The highest abundance is at station 1 with 10 individuals in 20 work units, while for station 2 with 6 individuals in 20 work units and for station 3 with 6 individuals in 20 work units, respectively, but there were not significant (P>0.05) between stations.

KEYWORDS: Scylla serrata, Purposively Random Sampling, Abundance.

INTRODUCTION

Mud Crab (*Scylla serrata* Forskal 1775) is a high quality export commodity because it utilized as food and incomes source for people in Kosrae and Micronesia. There are decrease of mud crab abundance and size in some countries, including Indonesia, due to the pressure of catcher that influenced by the distribution of population and commercial fishing business location.[2].

Until now, mud crab cultivation is still limited and could not fulfill the market demand. The supply of market demand mostly comes from nature catching. The fisherman catches this crab continuously without considering its sustainability. According to[8], the population of *S. serrata* in nature has decreased which presumed as the effect of overexploitation and mangrove ecosystem degradation. Mangrove forest on degraded and destructed coastal areas will cost the loss of fauna and flora if there is proper action to conserve or rehabilitate.[3].

Sungai Pisang is one of the coastal areas in Padang City, West Sumatra, Indonesia has 10 ha of mangrove forest which has decreased as much as 45%, due to the construction of community settlements and tourist resort areas. The impact of this condition is the decline of mud crab population, meanwhile, overfishing also resulted in a decline this populations. For the conservation and management of this crab population, it is necessary to conduct research on population abundance and environment habitat of mud crab in this area.

MATERIALS AND METHODS

The research was conduccted in May 2017 in mangrove forest areas on Sungai Pisang, Padang City, West Sumatra, Indonesia. The data analysis was done at the Laboratory of Animal Ecology Department of Biology, Faculty of Mathematics and Natural Sciences, Andalas University.

The methods was survey with taking sample purposively random sampling. There are three stations (Station 1: 1^o 07' 24.54" S; 100^o 23' 15.06" E, Station 2: 1^o 07' 30.51" S; 100^o 23' 18.79" E and Station 3; 1^o 07' 39.90" S; 100^o 22' 54.04" E), for fields were used, and each of station was placed randomly five unit bubus or traps in size 40 x 20 cm with fish head and chicken entrails for baits. The data were collected four times a day with five traps when the hight tide occured for two weeks (20 work units) and including data of enviromental factor.

RESULT AND DISCUSSION

The Abundance of Mud Crab

Based on the research, the result obtained that the abundance of mud crab (*Sylla serrata* Forskal 1775) on Sungai Pisang areas, Padang City, West Sumatera can be seen in Figure 1. The figure shows that the highest

abundance is at station 1 with 10 individuals in 20 work units, while for station 2 with 6 individuals in 20 work units and for station 3 with 6 individuals in 20 work units, respectively. The abundance value that obtained is much lower with 22 individuals in 20 work units compares to the research by[9]. with 44 individuals in 10 work units. Based on Friedman statistical analysis, there were not significant between stations (X^2 =0.122 < 5.800; P > 0.05).

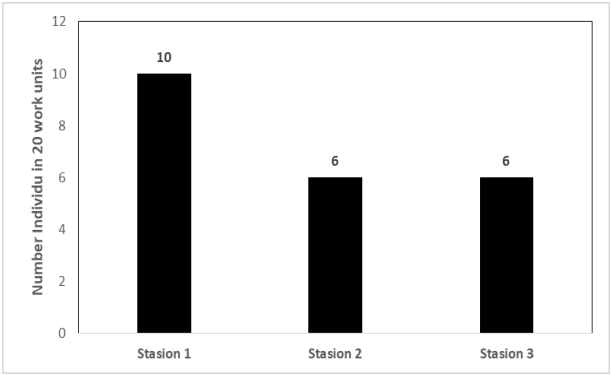

Figure 1: The abundance of mud crab on three stations of Sungai Pisang mangrove forest area, Padang City, West Sumatra, Indonesia.

The high abundance at station 1 compared to stations 2 and 3 caused still much food derived from decomposed mangroves and wood waste from unused fishing boats at station 1. According to[6] that mangrove vegetation plays an important role in the growth of mud crab, namely as a source of nutrients for these crabs. Mangrove's litter (parts of mangrove that have fallen) becomes the source of nutrition for mud crab. The role of mangroves vegetation causes mangrove vegetation directly proportional to mud crab's abundant. The higher is mangrove vegetation density, the higher the mud crab's abundance get. Based on[1] mud crab is not only consumed mangrove litter but also omnivorous-scavenger, consumers of all kinds (cannibal) and also consume mangrove roots (pheneumathopore).

Furthermore, the low abundance of mud crabs at two and three statitons were caused by the reduced mangrove forest area in the both stations, such as logging and mangrove clearing for residential and tourist resorts. Miranto et al. (2013) stated that the growth and existence of mud crab are depended on environment factor that are less supportive for mud crab, namely mangrove logging by people, household waste which will be disturb mud crab and affect their development.

Environmental Factor

The environmental factor were measurement suc as salinity, temperature, pH and subtrates (Table 1). During environmental factor taking, the weather at the three stations were raining and the waves were high. The weather such as sunny, cloudy, drizzle, and rain can affect the presence and activity of mud crab, when light intensity or rain were occured, they tends to rest. Mud crab will show itself in hot weather and raise their carapace to the surface by doing little move, while on cloudy and rain mud crab tends to more active in the water (Saragih and Zakaria, 2017).

Based on the measurement, salinity at three statios were low value (5 until 13‰). This condition was caused by rainy when the data were coleccted. High low salinity in the waters were affected by the tidal, raifall, evaporation, precipitation and topography. However salinity in this research location is still feasible for the life of mud crabs. Acording to[4]., mud crab could live at 5-36 ppt of salinity but during their growth, they prefer lower salinity 5-25 ppt.

Water temperature for all stations were 23 until 24^{0}C in averages. Acorrding to[5] that water temperature affects the growth, molting (changing skin activity), and mud crab's appetite. Water temperatures that lower that 20^{0}C may lead to the decrease of activity and mud crab's appetite. The high temperature is also not an exception. If the temperature is more than 42,1^{0}C, it will induce death. The right temperature for mud crab is around 23^{0}C – 32^{0}C.

The valuae of pH at each station has the same result. Each station has almost approached the neutral pH (7) with pH result is 7 in averages. Mud crab can survive at pH around 7,2 – 7,8[5]. It means that the mud crab is on their right pH condition for growth since where the data is taken is shows that pH 7 is measured the most.

Table 1: The environmental factors of mud crab's (*Scylla serrata* Forskal 1775) abundance in mangrove forest area in Sungai Pisang Kota Padang, Sumatera Barat.

Stations	Parameter			
	Salinity (‰)	Temperture ^{o}C	pH	Substrates
1	5-13	23-24	7	clay
2	11-12	23-24	7	clay
3	8-10	23-23	7	sand

CONCLUSION

Based on the results and discussion which are described above, it can be concluded the abundance of Mud Crab (*Scylla serrata* Forskal 1775) population in mangrove forest area, Sungai Pisang, Padang city is relatively low with the total 22 individuals in 20 work units. The highest abundance is at station 1 with 10 individuals in 20 work units, while for station 2 with 6 individuals in 20 work units and for station 3 with 6 individuals in 20 work units, respectively, but there were not significant (P>0.05) between stations.

ACKNOWLEDGEMENTS

The author wishes to thank Nofrita, Jabang Nurdin, Dahelmi who has provided guidance, direction, and suggestions in the writing of this journal.

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