

POPULATION DYNAMIC OF ENDEAVOUR SHRIMP (*Metapenaeus elegans*) IN THE WATERS OF SOUTH COAST OF JAVA

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ABSTRACT

Study on the population dynamic of endeavour shrimp (*M. elegans*) was conducted in the south coast of Java based on data collected during a period of November 2002 to October 2003. The purpose of the study is to identify biological and population parameters of the endeavour shrimp. Results shows that the size at first maturity of endeavor shrimp was 32.6 mm in carapace length. Sex ratio of males and females was 1.0:1.7. The chi square test indicated that comparison of male and female of the endeavour shrimp was significantly different. It means that there was imbalance in number between males and females. A number of 554 females were examined, resulting 60% were immature, and 40% were mature. The spawning season of endeavour shrimp in south coast of Java occurs throughout the year with two peaks, January (north west monsoon) and August (south east monsoon). The growth parameter of endeavour shrimp was 1.5 per year with maximum carapace length (L_{∞}) of 51.5 mm. Instantaneous total mortality (Z) and natural mortality (M) rates were 4.53 and 1.15 per year, respectively. While the respective fishing mortality (F) and exploitation rate (E) were 3.38 and 0.75 per year time respectively to maintain the sustainability of this shrimp fisheries resources. The exploitation rate of endeavour shrimp in south coast of Java was high. This suggests that fishing effort of the endeavour shrimp in that waters should be reduced.

KEYWORDS: shrimp, south coast of Java, population dynamic

INTRODUCTION

Endeavour shrimp (*M. elegans*) is one of penaeid shrimp species, dominantly caught in the waters of south coast of Java. Catch of endeavour shrimp may reach the third highest after others small size shrimp (*Parapenaeopsis stylifera*) and brown shrimp (*Metapenaeus ensis*) (Suman, 2004).

Exploitation of the endeavour shrimp in the water of south coast of Java has been carried out for years (Van Zalinge & Naamin, 1975) and become more intensive in the recent years due to an increase of local and or foreign market demand. If this situation continues to occur, sustainability of the shrimp stock would be disturbed in the future. Therefore comprehensive research is needed to reach rational utilization in order to maintain sustainability of the stock for prosperity purposes in the future (Naamin *et al.*, 1992).

This paper discussed population dynamic of the endeavour shrimp (*M. elegans*) in the south coast of Java. It hopes that the result can be used as basic and important information for other endeavour shrimp studies

and sustainable exploitation of the endeavour shrimp in the waters of the south coast of Java.

MATERIALS AND METHODS

Samples of the endeavour shrimp were taken from field research in south coast waters of Java (Figure 1) from November 2002 to October 2003. Biometric studies (carapace length, sex, and gonad maturity identifications) were done for 872 samples. Spearman & Karber method (Udupa, 1986) was applied to identify the size at first maturity with assumption that average size of first maturity occurs when 50% of the endeavour shrimp is already mature. Logarithmic size of the first sex mature (m) was calculated based on equation below:

$$m = xk + X/2 - (X \sum p_i)$$

where:

- m = logarithmic size of first sex mature
- xk = logarithmic size of mean value of 100% mature
- X = logarithmic different of mean value
- p_i = comparison of sex maturity of each length class