UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

MAXIMUM SUSTAINABLE YIELD OF SQUID POPULATION BY USING GORDON – SCHAEFER MODEL : A CASE STUDY IN MALAYSIA

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Improving the economic performance of fisheries is becoming increasingly important in fisheries management, and in some cases, maximum sustainable yield (MSY) is set as key management target. This research study is conducted on harvesting of squid population in Malaysia. Squid is one of the species threatened with extinction due to overfishing. The modern technology has increased the fishing capacity year by year. Hence, it is very vital to estimate the maximum sustainable yields, so that the squid can continuously be harvested and at the same time this species will not extinct. In this paper, we will identify maximum sustainable yield (MSY) of squid population using Gordon-Schaefer model approach. Gordon-Schaefer Model is a bio-economic model to compute the maximum sustainable yield (MSY). Besides that, this paper also attempts to control the quota of squid that can be caught at a time. Gordon-Schaefer Model incorporates the logistic model to capture the population dynamics. Therefore, the sustainable levels of fishing effort and biomass growth can be proposed to related body that over sees fishing operation. From our study, total of squid landings are not overfishing so the fishermen can still increase their catch for the year 2014 onwards. The total of effort catch has exceeds the value of Maximum Sustainable Yield and this means that, the fisherman should decrease their effort to catch the squid. This is important in order to increase the number of squid and encourage the continuous harvesting of the species.

INTRODUCTION

1.1 Introduction

In international standards, Malaysia has a medium sized of population, but has rapidly growing in economy. There are many economic sectors in Malaysia. The economic sectors can be divided into three sectors, which are the first sectors, the second sectors and the third sectors. Agriculture, poultry, fishery, forestry and mining are included in the first sector where it involves economic activity. The second sector is the sector of economic activity that involves an extension of the first sector. Then, the third sector involves sector of service such as transport, communication, government service and other. Based on subdivision, we can say that the first sector is the sector that connects with the traditional sector, while the second and third sectors are modern sector. Malaysia is a maritime nation surrounded by four seas; Strait of Malacca, the South of China Sea, the Andaman Sea and the Sulu Sea that connects international sea of the Indian Ocean to the west and Western Pacific Ocean on the east. With living waters of this vast area of 418000 km per square, the fishing industry has a great potential to be explored commercially.

Figure 1: The location of landing places in Malaysia

(www.seaaroundus.org)

Nowadays, the marine fisheries sector in Malaysia has been steadily increasing (Malaysia Fisheries Statistics). Fishery is one of the economic sectors which fall into first sector. The fisheries