A STUDY OF DIFFERENT HOOK SIZE AND NEAP/SPRING TIDES ON THE CATCH COMPOSITION OF HOOK AND LINE IN SEPANGGAR BAY

ZHANG XIAOYU

THE THESIS WHICH ATTACHED IS TO FULFILL PART OF THE REQUIREMENT TO OBTAIN A BACHELOR OF SCIENCE WITH HONOURS IN MARINE SCIENCE

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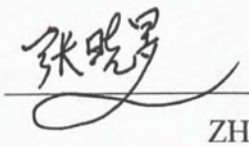

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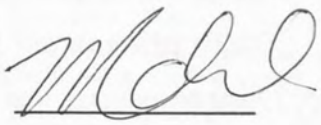

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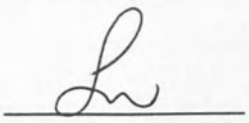

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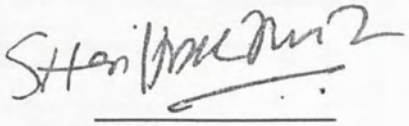

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ABSTRAK

Memancing dengan rawai telah lama dijalankan di Malaysia dan kini memancing menjadi semakin popular. Memancing adalah salah satu cara yang penting untuk industry perikanan di Sabah. Oleh demikian, pengkajian ini adalah penting untuk memajukan lagi perikanan. Dalam pengajian ini, sampel data tentang spesis ikan, name umum, panjang dan berat yang ditangkap di teluk Sepanggar dikemukakan. Pasang Surut perbani dan anak adalah berpunca daripada daya tarikan daripada bulan dan matahari. Disebabkan perbezaan kedalaman air, pergerakan air, dan banyak lagi faktornya mempengaruhi pasang surut, aktiviti perikanan di teluk Sepanggar terjejas. Selepas menjalankan analisis, keputusan menunjukan jumlah tangkapan adalah lebih banyak pada pasang surut perbani. Terdapat 154 ikan daripada 28 spesis telah ditangkap dalam lapan kali proses memancing pada 29th July 2007 hingga 15th November 2007. Bilangan tangkapan, purata berat dan panjang di antara spesis menunjukan mempunyai perbezaan yang sangat ketara. Selain daripada pasang surut, perbezaan tangkapan antara mata kail bersaiz 12 dan saiz 15 turut dikaji dan adalah salah satu objektif kajian ini. Akan tetapi, analisis menunjukan tidak terdapat perbezaan diantara saiz mata kail bilangan tangkapan di teluk Sepanggar.

ABSTRACT

Line fishing has an old history in Malaysia and become more popular even until now. It is one of the most important sources in fishery production. So this study is important in the development of fishery activity. In this study, sample data about the fish species, each species' common name, length and weight in Sepanggar Bay area provided. The spring and neap tides are action by gravitational forces of the moon and the sun both contribute to the tides. By the different sea water level, water current, and many other factors in the spring and neap tides, fishing activity is influence by the tide change in the Sepanggar Bay area. After the data analyses, the result show the number of catches is more when the fishing operation in the spring tide. A total of 154 fishes, 28 species, 19 families caught in the eight times sampling during 29th July 2007 until 15th November 2007. The number of catches, average weight and average length between species also has highly difference. Beside the affect from the spring and neap tides in the fishing operation, compare the catches between hook size 12 and 15 is another objective in this study. But the data analyses show there is no difference between hook size 12 and 15 using fish-baited hook and line in Sepanggar Bay.

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H1	Alternate hypothesis
ave	Average
cm	Centimeter
g	Gram
GPS	Global Position System
Hp	Horse Power
m	Meter
mm	Milimeter
mt	Metric tonnes
min	Minimum
max	Maximum
no.	Number
H0	Null hypothesis
lb	Pound
%	Percentage
spp	Species
UMS	Universiti Malaysia Sabah
VS	Versus

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CHAPTER 1

INTRODUCTION

1.1 History

Line fishing is one of the oldest forms of fishing and is still common. The method consists of a single fishing line with a weight and one or more lure-like hooks are attached (Wikipedia a, 2007). The line is jigged or moved up and down in a series of short movements, most often close to the sea floor. The motion attracts the fish, which are normally caught while trying to eat the lure but also as they move close to the jigged lure. The line is then hauled onboard and the fish removed. Line fishing is most often used to catch demersal fish and squid but other species are sometimes caught, including pelagic species.

The line fishing or similar device has probably been around man for many thousands of years. The earliest recorded fish hooks were from Palestine about 9000 years ago (Wikipedia a, 2007). Man have crafted fish hooks from all sorts of materials to include wood, animal and human bone, horn, shells, stone, bronze, and iron up to present day materials. In many cases, hooks were created from multiple materials to leverage the strength and positive characteristics of each material. Norwegians as late as the 1950s still use juniper wood to craft Burbot hooks. Quality steel hooks began to

make their appearance in Europe in the 1600s and hook making soon became a task for professionals (Wikipedia a, 2007).

1.2 Hook

The Fish hook is a device for catching fish either by impaling them in the mouth or by snagging the body of the fish. Fish hooks have been employed for centuries by fisherman to catch freshwater and saltwater fish. Fish hooks are normally attached to some form of line or lure device which connects the caught fish to the fisherman. There is an enormous variety of fish hooks in the world of fishing. Sizes, designs, shapes and materials are all variable depending on the intended purpose of the fish hook. Fish hooks are designed to hold various types of artificial, processed, dead or live baits (bait fishing).

1.3 Malaysian fishing

In Malaysia fishing is being developed both as a means of reducing unemployment and as a primary source of protein in the country's diet (Encyclopedia of the Nations, 2007). The total catch in 2000 was 1,289,245 tons, as compared with 296,300 tons in 1966; the increase has been largely the result of expanded and improved marketing facilities. Exports of fisheries products were valued at $349 million in 2000, with imports of $296.8 million that year. A government training program in navigation and engine care is also accelerating the use of powered boats. Freshwater fishing, which accounts for 2% of the total catch, occurs in paddy fields or

irrigation ditches and is integrated with rice farming and hog production (Encyclopedia of the Nations, 2007).

1.4 Line fishing in Kota Kinabalu

Around Kota Kinabalu, Sabah is located of the best sport fishing grounds in the world (Anonymous, 2007). It is since 2000 the Sabah International Fishing Tournament is every year arranged which is getting very popular and takes off to Pulau Mengalum from the Sutera Harbour Marina in Kota Kinabalu.

All year around, sport fishing charters from Kota Kinabalu are arranged. There is also, the Sabah Anglers' Association that helps the authorities by reporting illegal fishing activities in the waters around Sabah. In 2007 the above mentioned tournament is themed "Save our Seas" (Anonymous, 2007).

The South China Sea and the waters around Sabah are rich in marine resources. There is an impressive variety of fishes like amberjacks, barracudas, bill fish, groupers, mackerel, marlin, sailfish, snappers, giant trevally, tuna and many more (Anonymous, 2007).

1.5 Study background

Before the study there have been some studies on the catch composition in Sepanggar Bay and Gaya Bay area using traditional fishing gear by the Universiti Malaysia Sabah undergraduate students.

Nor Juneta Bt. Abu Seman, (2003) has studied the influence morning/ night and depth towards the catch composition in Gaya Bay using cages. The study areas had two stations. The total species and the number of fish caught are nine species and 59 fishes. The student used T-test and Mann-Whitney U test to analyze the comparison between the stations, morning/ night and depth. She found that the time for deploying nets for fishing is best done at morning and area of deeper water would yield more catches. She also suggests that the sampling be more and longer observation to be done onto the project.

Abdul Mu'aiz Bin Sa'aban, (2003) has studied the influence of tides and the depth towards the catch composition in Gaya Bay using long line fishing. The study areas had two stations. The total species and the number of fish caught are eight species and 26 fishes. Then the student used the ANOVA to analyze the comparison between the stations tides and depth. He found that the long line fishing yields more fishes as compared to other traditional fishing gear. The fishes that were caught are of deeper water.

Salina Binti Matt, (2003) has studied the influence of tides and depth towards the catch composition in Gaya Bay using bottom-set trammel net. The study areas had two stations. The total species and the number of fish caught are 15 species and 44 fishes. Then the student used the T-test to analyze the comparison between the stations tides and depth. She found that the yield of catches is higher at high tides as compared to low tides. Besides that she also found that the yield was more at shallower area. But statistically there is no significant difference between the tides and depth of water. The catches are not sufficient to undergo a proper statistical test and more sampling needed to be done to increase the number of catches.

1.6 Objective:

1. To identify fish species that can be caught using fish-baited hook and line in Sepanggar Bay.
2. To compare the catches between hook size 12 and 15 using fish-baited hook and line in Sepanggar Bay.
3. To compare the catches between spring and neap tides using fish-baited hook and line in Sepanggar Bay.

1.7 Significance of the Study

The study provided some experience and reference for the researchers in future. They will be guided how to carry out researches of the various related topics. It also provide the information regarding the best hook size to use and tides best time to fishing in Sepanggar Bay for sport fishing. And give some advices to the new angler in the hook choosing and using knowledge. Mostly it can be provided the sample data on the fish species, each species' common length and weight in the Sepanggar Bay area.

1.8 Limitations of the Study

During field work, there is restriction of language causing the lacking of communication with the local fisherman. It is affect the study in the location fish behaviors and characters. In the study there are some factors not sets, and they can affect the sampling operation. The rain, wind, wave, water current, salinity, water depth etc. can influence the data collection.

CHAPTER 2

LITERATURE REVIEW

2.1 Tides

Tides are the cyclic rising and falling of Earth's ocean surface caused by the tidal forces of the Moon and the Sun acting on the oceans. More generally, tidal phenomena can occur in any object that is subjected to a gravitational field that varies in time and space, such as the Earth's land masses or the Moon (Wikipedia b, 2007). The strip of seashore that is submerged at high tide and exposed at low tide and the intertidal zone, are important ecological products of ocean tides (Wikipedia b, 2007).

The changing tide produced at a given location is the result of the changing positions of the moon and sun relative to the earth coupled with the effects of Earth rotation and the local shape of the sea floor. Sea level measured by coastal tide gauges may also be strongly affected by wind (Wikipedia b, 2007).

2.1.1 The monthly tidal cycle

The monthly tidal cycle is 29.5 days because that is how long it takes the moon to complete an orbit around earth (Harold & Alan, 2004). When the moon is between earth and the sun, it cannot be seen at night. It is called the new moon. When the moon is on the side of earth opposite the sun, its entire disk is brightly visible. It is called the full moon. A quarter moon is a moon that is half lit and half dark as viewed from earth that occurs when the moon is at right angles to the sun relative to earth (Cooley, 2002).

When the sun and moon are aligned, either with the moon between earth and the sun (new moon; moon is conjunction) or with the moon on the side opposite the sun (full moon; moon in opposition), the tide-generating forces of the sun and moon combine. At this time, the tidal range (the vertical difference between high and low tides) is large (very high high tide tides and quite low low tides) because there is constructive interference between the lunar and solar tidal bulges. The maximum tidal range is called spring tide, because the tide is extremely large or "springs forth" when the earth-moon-sun system is aligned, the moon is said to be in syzygy (Harold & Alan, 2004). When the moon in the first or third quarter phase, the tide generating force of the sun is working at right angles to the tide generating force of the moon. The tidal range is small (lower high tides and higher low tides) because there is destructive interference between the lunar and solar tidal bulges. This is called a neap tide, and the moon is said to be in quadrature.

The time between successive spring tides or neap tides is one – half the monthly lunar cycle, which is about two weeks. The time between a spring tide and a successive neap tide is one – quarter the monthly lunar cycle, which is about one week (Harold & Alan, 2004).

2.1.2 Spring Tides

When the moon is full or new, the gravitational pull of the moon and sun are combined. At these times, the high tides are very high and the low tides are very low. This is known as spring high tide. Spring tides are especially strong tides (they do not have anything to do with the season spring). They occur when the Earth, the Sun, and the Moon are in a line. (Figure 2.1) The gravitational forces of the Moon and the Sun both contribute to the tides. Spring tides occur during the full moon and the new moon.

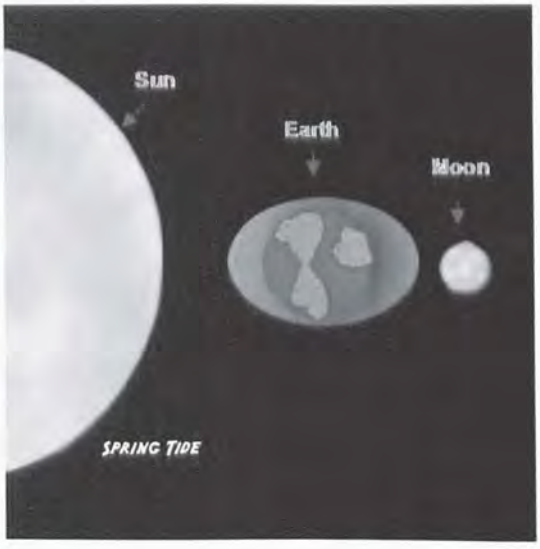

Figure 2.1: Spring tide

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