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Analysis of the total size and weight distribution of bream catches caped based on the moon phase in Segeri District, Pangkep District

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Abstract
Pangkajene and Islands Regency, or better known as Pangkep Regency, is geographically located between 110o - 113o East Longitude and 0.40o-0.80o South Latitude, located on the West coast of South Sulawesi. As the name implies, namely Islands, Rajungan (Portunus pelagicus) is one of the important economic catches for fishermen in Bawasalo Village, Segeri District, Pangkep Regency. The fishing gear used to catch blue swimming crabs in Bawasalo waters is a trap-like fishing gear, namely the dragon trap, which is often used by fishermen. Dragon trap is a fishing gear for shrimp, crab, fish and others, which has a long shape resembling a dragon snake with alternate doors. The crab catches using bubu naga fishing gear fluctuated, at certain times the crab catches increased and even reached the peak of their catches, and at certain times the catches decreased or even didn't exist at all. The fluctuation in crab catches requires an optimal strategy for crab fishing operations, one of which is by identifying the factors that affect crab catches. The fluctuation in crab catches is influenced by internal and external factors. One of the external factors that affect the fluctuation of crab catch is the moon phase
The results showed that the distribution of size and weight in the dark moon phase with an average size of 9.3cm with an average weight of 40.9gr (males) and obtained an average size of 9.9cm with an average weight of 38.6cm (females). 10.1 cm with an average weight of 53.7 grams (males) and an average size of 10.6 cm with a weight of 60.1 grams (females) and in the final ¼ moon phase, an average size distribution of 9.8 cm with an average weight of 54.3 grams (males) and an average size of 10.4 with an average weight of 59.9 grams (females). There is a significant influence between crab catches in the dark moon phase, early 1/4, full moon and late ¼ moon.

Keywords: swimming crab; Moon Phases; Bubu Dragon

Introduction

Blue swimming crab (Portunus pelagicus) is one of the fisheries resources, which is quite important for increasing income and meeting the needs of animal protein. Blue swimming crab (Portunus pelagicus) has important economic value and has been exported to various countries in both fresh and processed form. The penetration of blue swimming crab (Portunus pelagicus) in the export market has resulted in higher prices for blue swimming crab in the domestic and export markets. Export destination countries for crab commodities are Singapore, Hong Kong, Japan, Malaysia, Taiwan and the United States (Maylandia et al., 2021) [8]. Pangkep Regency has 115 small islands scattered in the Makassar Strait waters which administratively has an area of 12,362.73 km2 consisting of 898.29 km2 and 11,464.44 km2 of sea area. 0).

The fluctuation in crab catches requires an optimal strategy for crab fishing operations, one of which is by identifying the factors that affect crab catches. The fluctuation in crab catches is influenced by internal and external factors. One of the external factors that affect the fluctuation of crab catch is the moon phase. According to (Pratiwi et al., 2021a; Putra et al., 2019) [13, 15] during the full moon phase it shows that the catches of crabs are highest. This is believed to encourage blue swimming crabs to migrate over a wide area. On the contrary, during the new moon phase or the new moon phase, the crab does not carry out migration activities, making it difficult to catch.

Rajungan (Portunus pelagicus) is one of the important economic catches for fishermen in the Bawasalo Village, Segeri District, Pangkep Regency. The fishing gear used to catch blue swimming crabs in Bawasalo waters is a trap-like fishing gear, namely the dragon trap, which is often used by fishermen. Dragon trap is a fishing gear for shrimp, crab, fish and others, which has a long shape resembling a dragon snake with alternate doors. The crab catches using bubu dragon fishing gear fluctuated, at certain times the crab catches increased and even reached the peak of their catches, and at certain times the catches decreased or even didn't exist at all. The phases of the moon periodically change and become a factor that affects the waters physically, chemically and biologically. These conditions in the marine area cause tides which have a major influence on the life of marine biota such as blue swimming crab (Portunus pelagicus). Appropriate fishing strategies can be carried out by targeting one species or by looking at the moon phases (Pratiwi et al., 2021b) [14].

Based on the problems described above, the researcher raised the title of the study entitled *"Analysis of the number, size distribution and weight of crab caught caught by bubu dragon based on the moon phases in the waters of Segeri District, Pangkep Regency"* which aims to determine the total distribution, size and weight of blue swimming crab (Portunus pelagicus) caught by fishermen during the full moon and new moon phases from Bawasalo waters, Segeri District.

Research purposes

Based on the formulation of the problem that has been proposed, the research objectives to be achieved in this study are:

1. To find out the size and weight distribution of crab catches based on the moon phase caught by dragon traps in the waters of Segeri District, Pangkep Regency
2. To determine the effect of the moon phase on the catch of crabs caught by dragon traps in the waters of Segeri District, Pangkep Regency.

Research Methods

This research was conducted from March to May 2023M by following the Hijriah calendar of Ramadhan to Dzulhijjah 1444H in the waters of Bawasalo beach, Segeri District, Pangkep Regency.

Method of collecting data

This research will use primary data in which primary data is collected using a survey method approach and conducting observations, interviews, and active involvement in the field later. The primary data obtained is direct information on the object by the researcher relating to the variable of interest in the specific purpose of the research.

Collected Data

1. Data on the number of catches of blue swimming crab (Portunus elagicus) based on the phase of the moon caught by Bubu Naga
   - Determine the time of data collection based on the specified moon phase
   - Collecting data based on the phases of the moon on the catches of blue swimming crab (Portunus Pelagicus) using dragon traps
   - The data collected includes catches for the last year from the sale of fishermen to collector fishermen at the research location.

2. Data on the size distribution of blue crab (Portunus pelagicus) catches based on the phase of the moon caught by the snakehead crab.
   - Determine the time of data collection based on the specified moon phase
   - Collecting data based on the phases of the moon on crab catches (portunus pelagicus) using dragon traps, by measuring the width of the crab carapace (portunus pelagicus) caught using dragon traps
   - The number of blue swimming crab (portunus pelagicus) measured from the catch of dragon bubu is adjusted to the catch.
   - Measurements were made 6 times for each phase of the moon during the study.
   - Collecting data for 2 months according to the specified moon phase.

3. Data on weight of blue crab (Portunus pelagicus) catches based on the phase of the moon caught by Dragon Bubu.
   - Determine the time of data collection based on the specified moon phase
   - Collecting data based on the phases of the moon on crab (Portunus pelagicus) catches using dragon traps, by weighing the crab (Portunus pelagicus) caught using dragon traps
   - Weighing is done on the bubu dragon catches every day for the moon phase during the research to collect data for 2 months.

Data analysis

Analysis of Total Catches

This analysis will be carried out descriptively where the catches of blue swimming crab (portunus pelagicus) in each phase of the month are recorded, each of which is caught in the form of a graph or diagram, which will make it easier to analyze the number of catches of blue crab (portunus pelagicus) for each phase of the month.

Size and Weight Distribution Analysis

Data on width and weight measured in the form of a frequency distribution will make it easier to analyze the size distribution of each type of catch in each phase of the moon and is calculated by the formula:

$K = (1 + (3.3 \text{ X } \log n))$

Long interval Class (i) = Range/K

Information:

K = Number of Classes

N = Lots of Data

Range = Largest Data –Smallest Data

According to Saripuddin and Ihsan (2016), for comparison of the size (cm) of the catch, the frequency distribution approach is used so that the size distribution of the caught catch is known.

The steps in preparing the frequency distribution include:

1. Sort the data from the smallest to the largest data
2. Determine the range (R) or range of data, with the largest data minus the smallest data (range/reach)
3. Determine the number of classes (K), namely k = 1+3.3 log n where k is the number of classes and n is the amount of data
4. Determine the length of the class, namely the range (R) divided by the number of classes (K)
5. Determine the first class limit.

Analysis of the relationship of moon phases to catches

T-test was conducted to test the research hypothesis regarding the effect of each independent variable partially on the dependent variable. The T test (Test T) is a statistical test that is used to test the truth or falsity of a hypothesis which states that between two mean samples taken randomly from the same population, there is no significant difference (Ghozali, 2016) (Understanding the t Test in Linear Regression - Accounting, n.d.)

The t-test aims to determine whether the independent variable (X) partially (alone) has an effect on the dependent variable.

The t test is carried out by comparing t arithmetic with t table with the following provisions;

1. If the sig value <0.05 or t-count > t-table, then there is an influence of variable X on variable Y.
2. If the sig value > 0.05 or t-count < t-table, then there is no effect of variable X on variable Y.

Formula;

T table = t (a/2: n – k-1)

Information:

N = Number of surveys or data

K = Number of Variables

Results and Discussion

1. Number of caught dragon fish caught by dragon bubu based on moon phase

The results of observations during research in the waters of the Segeri District, Kab. From Pangkep, we can see that during the 2 months of 24 days of research by following the phases of the first ¼ moon, full moon, ¼ end and dark moon can be seen in the following table

Table 1: Number of Catches (Tail) Crab during the Moon Phase

No	Moon phase	Number (tail) catch
1.	Dark Moon Phases	169
2.	Moon Phases ¼ Early	193
3.	Full Moon Phases	271
4.	Moon Phase ¼ Late	200
Total		833

Data on the number of crab catches obtained during the 2-month study totaled 833 consisting of (163 individuals) caught in the dark moon phase, (193 individuals) in the early ¼ moon phase, (271 individuals) in the full moon phase and (200 individuals) caught in the final ¼ moon phase. The difference in the moon phases has a significant influence on the behavior of the blue swimming crab. (Portunus pelagicus), namely roaming and feeding. During the full moon phase, the intensity of moonlight entering the waters is relatively high, thereby stimulating and increasing the behavior of blue swimming crab (Portunus pelagicus), namely wandering and feeding during the dark moon, relatively no light entering the water, so the waters become dark. In addition, the full moon phase is also synonymous with high tides, causing plankton which is the crab's main food to be more widely distributed in the waters and causing the crab to be more active in searching for food (Soliha & Rahayu, 2018) [18]. This is related to the number of crab catches because blue crab (Portunus pelagicus) will forage in places with more light (positive phototaxis) so that the full moon phase plays an important role in the activity of the crab foraging (Azis et al., 2016).

2. Size and weight distribution of caught Caught dragon balls based on moon phases

Size and weight distribution of dragon Bubu catches in dark moon phase

The carapace width of the male crab in the dark month is 7.4cm – 11.3cm with an average carapace width of 9.3cm. The number of catches that dominated the dark moon phase in the class interval of 8.4cm – 10.3cm was 37 individuals and the fewest catches were in the class interval of 10.4cm – 11.3cm (8 individuals). The catch of 97 male crabs was 52 with a width < 9.5. This indicates that the width of the male crab during the dark moon phase is not in accordance with the KP Regulation No. 2 of 2015 that the size of the required crab to be caught is 10cm (> 10cm) larger. Ihsan (2015) said that young adults in the coastal waters of Kab. Pangkep was obtained with a size of 95.5 mm (9.5 cm) and from the waters of Baii Island, Bengkulu City, the size of the carapace width of the male crab was 6 cm – 14 cm on average 11.8 cm (Maylandia.et al 2021) [8]. The weight of the male crab caught by the dragon trap during the dark moon phase ranges from 18.3gr – 98.2gr with an average value of 40.9g. The smallest weight of the crab was in the class interval of 18.3gr – 38.2gr with a production frequency of 43 (heads) and the largest weight was in the class interval of 78.3gr – 98.2gr (2 individuals). tail) the average weight of the male crab in the dark month is 40.9 grams. In research (Anam. et al., 2018) the average weight of individual male crabs was 63.77 ± 18.2 g. This shows that the results of research on the weight of male crabs in the dark moon phase in Bawasalo waters were 40.9 g < 63.77 g from research results in other catchment areas. Differences in crab weight according to Zairon (2015) can be caused by factors such as gender, age, parasites and disease, water quality, food availability, or loss of limbs. the carapace width of the female crab in the dark moon is 7.6cm – 14.5cm with an average carapace width of 9.9cm. The number of catches that dominated the dark moon phase in the class interval of 9.6cm – 10.5cm was 26 individuals and the fewest catches were in the class interval of 13.6cm – 14.5cm (8 individuals). In the catch of female crabs in the dark moon phase of 72 there were 57 dominant female crabs caught that were <10cm in size. Ihsan (2015) said that the female crab first matured (young adults) at a carapace width of 106 mm (10.6 cm). Kembaren et al, (2012) in Ihsan (2018) [7] said that based on the results of the analysis using the Spearman-Carber method, it was found that the first time the crab matured in Bone waters was a carapace width of 71.26 mm and ranged from 69.36 – 73.97 mm at a 95% confidence level.

Size and weight distribution of dragon Bubu caught ¼ early moon phase

The carapace width of the male crab is in the range of 7.1cm – 14cm with an average of 9.5cm. In the catch of crabs in the moon phase, the initial ¼ carapace width was dominated by 33 fish caught at class intervals of 8.1cm – 9cm, and the lowest carapace width was at class intervals of 13.1cm – 14cm with a catch production frequency of only (2 fish). The catch of 116 male crabs was 49 individuals with a width of <9.1cm. This shows that the width of the male crab in the early ¼ moon phase was not in accordance with the KP Regulation No. 2 of 2015 that the size of the required crab to be caught was 10cm (> 10cm) larger. 5cm) this shows that the blue swimming crab in the waters of Bawasalo, Segeri sub-district, has decreased in size, besides that the trap fishing gear is operated only at a depth of 1-3 miles so that the catch is still relatively small. The weight of the male crab caught by the dragon trap in the first quarter moon phase ranged from 22.4gr – 142.3gr with an average value of 42.4g. The smallest crab weight was in the class interval of 22.4gr – 42.3gr with a production frequency of 51 (heads) and the largest weight was in the class interval of 122.3gr – 142.3gr (1 head). 42.3gr (1 tail). The carapace width of the female crab is in the range of 7.6cm – 12.5cm with an average of 9.6cm. In the catch of crabs in the initial ¼ moon phase, the dominant carapace width was caught in the class interval of 8.6cm – 9.5cm with a total of 28 individuals, and the lowest carapace width was in the class interval of 11.6cm – 12.5cm with a catch production frequency of only (9 individuals). The carapace width of female crabs in the initial ¼ phase is caught on average 9.1 cm where this size is not in accordance with the KP Regulations No. 2 of 2015 and this is because the trap fishing gear is operated not far from the beach pier, only about 1-3 cm. Ihsan (2021) [6] said that at a distance of 0 -2 miles there are still more that are smaller/not worth catching. This is because blue swimming crab is a marine organism, which part of its life is in coastal waters. This is the main reason why many crabs are caught around the coast, including male crabs, rearing, foraging and rearing crabs not far from the beach (Ihsan et al, 2015). The weight of female crabs caught by dragon traps in the first ¼ moon phase ranged from 22.9 grams – 42.8 grams with an average value of 49.4 grams. The smallest weight of the crab was in the class interval of 22.9gr – 42.8gr with a production frequency of 26 (heads) and the largest weight was in the class interval of 102.9gr – 122.8gr (2 individuals). The catch weight of the female crab that dominated the catch was in the class interval of 42.9gr – 62.8gr (28 individuals) and the catch weight of the female crab in the early ¼ moon phase was the least caught in the class interval of 102.9gr – 122.8gr (2 tails).

Size and weight distribution of dragon Bubu Catches in the Full Moon Phase

The carapace width of the male crab is in the range of 7.7cm – 12.6cm with an average of 9.9cm. In the catch of male crabs during the full moon phase, 50 individuals were caught at class intervals of 8.7cm – 9.6 cm, and the least carapace width was at class intervals of 11.7cm – 12.6cm with a catch production frequency of only 14 individuals. During the full moon phase, the dominant male crab is caught with an average of 10.1 cm. Ihsan (2015) said that young adult male crabs (the first time they matured) in the waters of Pangkep district with a carapace width of 95.5 mm (9.5 cm) during the full moon phase, the carapace width increased by 5% from the catch of the dark moon phase and the first ¼ moon phase. (Harianto 2018). The weight of the crabs caught by the trapper during the full moon phase ranged from 27.8 grams to 147.7 grams with an average value of 53.7 grams. The weight of the smallest male crab was in the class interval of 27.8gr – 47.7gr with a production frequency of 54 (heads) and the largest weight was in the class interval of 127.8gr – 147.7gr (1 head). 47.7gr (1 tail). the carapace width of the female crab is in the range of 7.7cm – 13.3cm with an average of 10.6cm. The catches of female crabs that dominated caught during the full moon phase were in class intervals of 10.4cm – 11.3cm totaling 31 individuals, and the least carapace width was in class intervals of 12.4cm – 13.3cm with a catch production frequency of only 4 individuals. Size and Weight Distribution of Dragon Bubu Catches in the Full Moon Phase the carapace width of the male crab is in the range of 7.7cm – 12.6cm with an average of 9.9cm. In the catch of male crabs during the full moon phase, 50 individuals were caught at class intervals of 8.7cm – 9.6 cm, and the least carapace width was at class intervals of 11.7cm – 12.6cm with a catch production frequency of only 14 individuals. During the full moon phase, the dominant male crab is caught with an average of 10.1 cm. Ihsan (2015) said that young adult male crabs (the first time they matured) in the waters of Pangkep district with a carapace width of 95.5 mm (9.5 cm) during the full moon phase, the carapace width increased by 5% from the catch of the dark moon phase and the first ¼ moon phase. (Harianto 2018). The weight of the crabs caught by the trapper during the full moon phase ranged from 27.8 grams to 147.7 grams with an average value of 53.7 grams. The weight of the smallest male crab was in the class interval of 27.8gr – 47.7gr with a production frequency of 54 (heads) and the largest weight was in the class interval of 127.8gr – 147.7gr (1 head). 47.7gr (1 tail). The carapace width of the female crab is in the range of 7.7cm – 13.3cm with an average of 10.6cm. The catches of female crabs that dominated caught during the full moon phase were in class intervals of 10.4cm – 11.3cm totaling 31 individuals, and the least carapace width was in class intervals of 12.4cm – 13.3cm with a catch production frequency of only 4 individuals.

Size and weight distribution of Dragon Bubu Caught ¼ early moon phase

The width of the crab carapace is in the range of 7.2cm – 13.1cm with an average of 9.8cm which is not suitable for catching / not in accordance with the Minister of Maritime Affairs and Fisheries No. 2 of 2015. In the catch of male crabs at the last ¼ moon phase the size of the carapace width is dominated by 46 individuals caught at class intervals of 9.2cm – 10.1cm, and the least carapace width is at class intervals of 12.2cm – 13.1cm with production frequency the catch is only (2 tails). The weight of the crabs caught by the dragon trap during the last ¼ moon phase ranged from 24.2 grams – 144.1 grams with an average value of 54.3 grams. The weight of the smallest male crab was in the class interval of 24.2gr – 44.1gr with a production frequency of 26 individuals and the largest weight was in the class interval of 124.2gr – 144.1gr (1 head). .1 gram and 124.2 gram – 144.1 gram (1 head). The width of the crab carapace was in the range of 7.7cm – 12.6cm with an average of 10.4cm in accordance with the crab catch requirements of the Minister of Maritime Affairs and Fisheries Regulation No. 2 of 2015. In the catch of female crabs in the last ¼ moon phase, the size of the carapace width was dominated by 29 caught at class

intervals of 9.7cm – 10.6cm, and the least carapace width was in class intervals of 11.7cm – 12.6cm with a catch production frequency of only (7 heads). In addition to the full moon phase, the final ¼ of the width of the crab carapace experiences development from the capture of the dark moon and the first ¼. The weight of the crabs caught by the dragon trap during the last ¼ moon phase ranges from 25.4gr – 105.3gr with an average value of 59.9gr. The smallest crab weight was in the class interval of 25.4gr – 45.3gr with a production frequency of 23 individuals and the largest weight was in the class interval of 85.4gr – 105.3gr (8 individuals).

3. The effect of moon phase on caught fish caught by Bubu Naga

To determine the effect of the moon phases consisting of the dark moon phase, early ¼ moon phase, full moon phase and late ¼ moon phase on the catch of blue swimming crab (Portunus Pelagicus) using dragon trap fishing gear in this study, we must determine the T table, namely 2.830.

Table 2: Catch (Kg) of crab caught by Dragon Bubu

No	Month Phase	Catch Production (Kg)
1	Dark Moon Phase	75.919
2	Moon Phases ¼ Initial	102.095
3	Full Moon Phases	170.430
4	Moon Phases ¼ End	118.222
Total		**466.666**

From the catches in Table 4 we can determine whether there is a significant effect on the crab catch (portunus pelagicus) with each moon phase.

Effect of capture moon phase A (Dark Moon Phase) Vs B (Early ¼ Moon Phase)

the results of the T test (partial) that the significance value of the effect of A (Dark Moon Phase) on B (early ¼ moon phase) is 0.001 <0.05 and the calculated T value is 11.802 > from the t table value of 2.830 then H0 is rejected and H01 is accepted meaning that there is a significant influence on the catch A (dark moon) with B (Initial 1/4 Phase). The catch of the dark moon phase (A) with the initial ¼ moon phase (B) significantly influences this because the moon phase is the phase where the tides occur, in research (Harianto 2018) says that sea water in the Segeri waters area during the dark moon experiences tides of 169cm with a low tide of 59cm while in the first quarter months it experiences a high tide of 115 with a low tide value of 23cm which causes an influence between the catches of the dark moon and the final ¼ month.

Effect of capture moon phase a (Dark Moon Phase) Vs C (Full Moon Phase)

the results of the T test (partial) that the significance value of the effect of A (Dark Moon Phase) on C (Full Moon Phase) is 0.001 <0.05 and the calculated T value is -5.627 < from the t table value of 2.830 then H0 is rejected and H01 is accepted meaning that there is a significant effect on catch A (Dark Moon Phase) with catch C (Full Moon Phase). the catch of the dark moon phase (A) with the full moon phase (C) has a significant effect. In research (Harianto 2018) said that the sea water in the Segeri waters area during the dark moon experiences tides of 169cm with a low tide of 59cm while at the full moon it experiences a very high tide height (185cm) with a low tide value of 23cm which causes an influence between the catches of the dark moon phase and the full moon phase.

Effect of catches Moon Phase A (Dark Moon Phase) Vs D (Moon Phase ¼ Late) T test results (partial) that the significance value of the influence of A (Dark Moon Phase) on D (Late ¼ Phase) is 0.001 <0.05 and the T value is 9,735 > t table value is 2,830 then H0 is rejected and H01 is accepted, meaning that there is a significant influence on catch A (dark moon) with Catch D (Moon Phase) ¼ end). The results of the dark moon phase (A) with the final ¼ moon phase (D) significantly affect. Harianto (2018) said that the sea water in the Segeri waters area during the dark moon experienced high tides of 169cm with a low tide of 59cm while in the last quarter of the month it experienced a decrease in tide height (149cm) with a low tide value of 40cm which caused an influence between the catches of the dark moon phase and the final quarter moon phase.

The Effect of Caught Moon Phase B (Moon Phase ¼ Early) Vs C (Moon Phase ¼ Full)

the results of the T test (partial) that the significance value of the effect of B (Early ¼ Moon Phase) on C (Full Moon Phase) is 0.001 <0.05 and the calculated T value is 66.649 > t table value of 2.830 then H0 is rejected and H01 is accepted, meaning that there is a significant effect on catches B (early ¼ lunar phase) with catches C (full moon phase). Catches of early ¼ moon phase (B) with the full moon phase (C) significantly influential. In research (Harianto 2018) said that the sea water in the Segeri waters in the first quarter of the month experiences very low tides (115cm) with low tide (23cm), while at the full moon it experiences very high tides (185cm) with a low tide value of 23cm which causes an influence between the catches of the first quarter moon phase and the full moon phase.

Effect of catch Moon Phase B (Moon Phase ¼ Early) Vs D (Moon Phase ¼ End)

The results of the (partial) T test show that the significance value of B (Early ¼ Moon Phase) on D (Moon Phase ¼ End) is 0.001 <0.05 and the t-count value is 11.641 > t-table value is 2.830 then H0 is rejected and H01 is accepted, meaning that there is a significant effect on catches B (early ¼ month phase) and catch D (late ¼ month phase). early (B) to the final ¼ moon phase (D) significantly affected. (Harianto 2018) said that the sea water in the Segeri waters in the first ¼ month experienced high tides only (115cm) with low tide (23cm) while in the last ¼ month experienced an increase in tide height (149cm) with a low tide value of only 40cm which caused an influence between the catches of the early ¼ month phase and the final ¼ month phase.

Effect of C catch Moon Phase (Full Moon Phase) Vs D (Final ¼ Moon Phase)

The results of the (partial) T test show that the significance value of the effect of C (Full Moon Phase) on D (End ¼ Moon Phase) is 0.001 <0.05 and the calculated T value is -6.068 < from the t table value of 2.830 then H0 is rejected and H01 is accepted, meaning that there is a significant effect on the catch C (Full Moon Phase) with Catch D (Moon Phase ¼ End. The catch is the full moon phase (C) with the phase the last ¼ month (D) has a significant effect. In research (Harianto 2018) said that the sea water in the Segeri waters during the full moon experiences very high tides (185cm) while in the final ¼ months the tides decrease (149cm) which causes an effect between the catches of the first ¼ moon

phase and the full moon phase.

The full moon pattern (Spring Tide) occurs in the new and full moon phases while the neap tide pattern (Neap Tide) occurs in the Quarter and Three-quarter moon phases. The tidal forces that occur in the Spring Tide are greater than the tidal forces that occur in the Neap Tide so that they are able to carry larger fish larvae into the estuary waters of the river. The strength of the currents at high tide causes fish larvae to be carried to the estuary and prefers to stay at low tide because the estuary area has an abundance of food sources for fish larvae and adult fish. According to Subiyanto, et al (2009) There are differences in abundance at high and low tide because at high tide many fish larvae are carried to the estuary by the tides and avoid ebb currents by being on the water side of the estuary because in the estuary area they find a suitable place for growth. This was confirmed by Subiyanto, that the larvae were moved by currents where the current flowed towards the mouth of the estuary during flood tides, and the fish larvae that were distributed to the mouth of the estuary were young larvae and young fish.

Conclusion

The results of research in the waters of Segeri District, Pangkajene and Archipelago Regencies can be concluded as follows:

1. Number of successive crab catches full moon phase (33%), late ¼ phase (24%), early ¼ phase (23%) and dark moon phase (20%). The size and weight distribution of crab caught using trap fishing gear based on the phase of the moon shows that during the full moon phase the width of the crab carapace develops.
2. The partial results of the t test analysis of the moon phases (dark moon, early ¼ moon, full moon and late ¼ moon) have an effect (significance) on the catch.

References

1. Afifah N, Bengen DG, Sunuddin A, Agus SB. Morphometrics and Size Distribution of Blue Crab (Portunus pelagicus, Linnaeus, 1758) in Lancang Island Waters, Thousand Islands. Proceedings of the Fisheries Research Center, 2017, 31-44.
2. Arif M. Population Structure of Crab Crab (Portunus pelagicus) Caught with Gill Net and Bubu Fishing Gear by Fishermen of Sabangko Island, Pangkep Regency. Thesis, Unpublished. Makassar: PPS Hasanuddin University, 2018.
3. Pangkep Regency BPS. BPS Pangkajene and Islands Regency, 2020. https://pangkepkab.bps.go.id/
4. Gardenia TY. The Catching Technology of Choice for Crab Fishery in Gebang Mekar Waters, Cirebon Regency. Bogor Agricultural Institute, 2006.
5. Ihsan I, Jamal M, Asbar A, Kafi AT. Trap Net Technical Dimensions and Size Distribution of Catches Based on Moon Phases in the Waters of Sigeri District, Pangkep Regency. Proceedings of the Pangkajene Islands State Agricultural Polytechnic National Seminar, 2021; 199-215.
6. Ihsan I, Tajuddin M, Abdullah H, Zainuddin Z. Size Distribution of Gillnet Caught Caught with Different Distances of Catching Locations in Pangkep Regency Waters. J. Airaha. 2021; 10:192-201.
7. Ihsan. Size Distribution and Fishing Season Patterns of Swimming Crab (Portunus pelagicus) in The Waters of Pangkep District - South Sulawesi By':, Journal of Marine Fisheries. 2018; 9(1):73-83
8. Maylandia CR, Matondang DR, Ilhami SA, Parapat AJ, Bakhtiar D.Study on the size of blue swimming crab (Portunus pelagicus) according to sex, gonadal maturity level and condition factors in the waters of Baai Bengkulu Island. Al-Hayat: Journal of Biology and Applied Biology, 2021, 4(2). https://doi.org/10.21580/ah.v4i2.7874
9. Understanding the T Test in Linear Regression – Accounting. (n.d.). Retrieved June 10, 2023, from https://accounting.binus.ac.id/2021/08/12/memahami-uji-t-dalam-regresi-linear/
10. Mustafa A, Abdullah A. Population-Based Fishing Regulation Strategies Using Snakehead Fishing Gear in Blue Crab Fish: A Case Study in the Waters of Konawe Regency, Southeast Sulawesi. Aquasains. 2013; 2(1):45-52.
11. Mutia Fadilla. The influence of oceanographic factors on the catch of bubu dragon in the Bira sub-district, Tamalanrea sub-district, Makassar city, 2022.
12. Pangkep Regency Government. Overview. Geographical location, 2020. https://pangkepkab.go.id/selayang-pandang
13. Pratiwi WB, Nuraini RAT, Widianingsih W. Morphometric Study of Blue Crab (Portunus pelagicus) Linnaeus, 1758 (Crustacea: Portunidae) in Two Different Phases of the Moon in the Waters of the Tunggulsari Village, Rembang. Journal of Marine Research. 2021a; 10(1):109-116. https://doi.org/10.14710/jmr.v10i1.28667
14. Pratiwi WB, Nuraini RAT, Widianingsih W. Morphometric Study of Blue Crab (Portunus pelagicus) Linnaeus, 1758 (Crustacea: Portunidae) in Two Different Phases of the Moon in the Waters of the Tunggulsari Village, Rembang. Journal of Marine Research. 2021b; 10(1):109-116. https://doi.org/10.14710/jmr.v10i1.28667
15. Putra EM, Pramesti R, Santosa GW. Morphometry of Portunus pelagicus Linnaeus, 1758 (Malacostraca: Portunidae) at Different Moon Phases in Betahwalang Waters, Demak. Journal of Marine Research. 2019; 8(2):204-210. https://doi.org/10.14710/jmr.v8i2.25104
16. Putri RLC, Fitri ADP, Yulianto T. Analysis of differences in types of bait and length of immersion time in trap fishing gear on crab catches in Suradadi Tegal Waters. Journal of Fisheries Resources Utilization Management and Technology. 2013; 2(3):51-60.
17. Santoso D, Raksun AK, Japa L. Bioecological Characteristics of Blue Swimming Pool (Portunus Pelagicus) in Ujung Lombok Waters. Journal of Tropical Biology, 2016. https://doi.org/10.29303/jbt.v16i2.312
18. Soliha E, Rahayu SYS. Water quality and plankton diversity in Cikaret Lake, Cibinong, Bogor. Ecology: Scientific Journal of Basic Sciences and the Environment. 2018; 16(2):1-10.
19. Subiyanto, Widyorini N, Iswahyuni. Effect of tides on recruitment of fish larvae in East Pelawangan Cilacap chicks. Journal of Fisheries Science. 2009; 5(1):44-48.

20. Wiyono. A Check list of the demersal species in the Java Sea. Special report No.I. Contribution of Demersal Fish Project. MRIF. Jakarta, 2014.
21. Zairion. Sustainable management of blue swimming crab (Portunus pelagicus) in East Lampung. [Dissertation]. Coastal and Marine Resources Management Program, Bogor Agricultural University, 2015, 236.