

**BFT GROWTH STUDY IN FARM**  
**(ICCAT GBYP 09/2019-e)**  
**RESEARCH ON AKUA-GROUP SU ÜRÜNLERİ**  
**A.Ş TURKEY**

**FİNAL REPORT (02.07.2019 – 02.01.2020)**

Şükrü YILDIRIM

Ph.D.,Assoc.Prof

Ege University, Faculty of Fisheries Aquaculture Dept.

Bornova / İzmir/ TURKEY



This project is co-funded  
by the European Union

## Contents

|                                                                     |    |
|---------------------------------------------------------------------|----|
| ▪ Abstract .....                                                    | 3  |
| ▪ List of table.....                                                | 4  |
| ▪ List of figures.....                                              | 5  |
| ▪ Introduction.....                                                 | 6  |
| ▪ Consolidated reports (final reports).....                         | 7  |
| ▪ <u>July 2019</u> analysis information.....                        | 29 |
| ▪ Lengths and weights of BFT ( <u>July 2019</u> Raw data).....      | 30 |
| ▪ <u>September 2019</u> analysis information.....                   | 36 |
| ▪ Lengths and weights of BFT ( <u>September 2019</u> Raw data)..... | 37 |
| ▪ <u>November 2019</u> analysis Information.....                    | 43 |
| ▪ Lengths and weights of BFT ( <u>November 2019</u> Raw Data).....  | 44 |
| ▪ <u>January 2020</u> analysis Information.....                     | 50 |
| ▪ Lengths and weights of BFT ( <u>January 2020</u> Raw Data).....   | 51 |
| ▪ Photos from project.....                                          | 57 |

## Abstract

Bft Growth Study In Farm (**Iccat Gbyp 09/2019-E**) was conducted using a 66 m diameter floating polyethylene cage at the farm located on the Turkey/ Izmir/ Cesme coastline **owned by Akua-Group Su Urunleri AS Turkey**. The mesh width of the net used in the study is 100 mm, the side collar mesh depth is 18m, and the bottom depth with the pot is 32m. While, stock density in the trial cage at the start of the work on **02.07.2019 was 2.53 kg/m<sup>3</sup>**, at the end of the study (02.01.2020) **it reached 4.33 kg/m<sup>3</sup>**. **AQ1 stereoscopic camera system was used for periodic measurements of 2245 BFTs** caught from the Eastern Mediterranean. It was observed that at the beginning of the study tuna had an **average weight of 69.68 kg and reached an average weight of 118.6 kg** at the end of the study. **During this 6-month period, the total bait given to the cage was calculated as 2072850 kg and the ratio of feed to meat conversion (FCR) in tuna was 18.22.**

## List Of Table

|                                                                                                                                                       |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Table 1.</b> Weight Measurement Comparison July 2, 2019 and January 2, 2020.....                                                                   | 8  |
| <b>Table 2.</b> Weight Measurement Comparison July 2, 2019 and September 2, 2019.....                                                                 | 9  |
| <b>Table 3.</b> Weight Measurement Comparison September 2, 2019 and November 2, 2019.....                                                             | 10 |
| <b>Table 4.</b> Weight Measurement Comparison November 2, 2019 and January 2, 2020.....                                                               | 11 |
| <b>Table 5.</b> Weight Measurement (mean weight, number of sampled fish, maximum and minimum weight) comparison July 2, 2019 and January 2, 2020..... | 12 |
| <b>Table 6.</b> Feeding Types and Water Conditions.....                                                                                               | 17 |
| <b>Table 7.</b> Feed Conversion Rate .....                                                                                                            | 24 |
| <b>Table 8.</b> Lengths and weights of BFT (July 2019 Analysis)(Raw data).....                                                                        | 30 |
| <b>Table 9.</b> Lengths and weights of BFT (September 2019 Analysis)(Raw data).....                                                                   | 37 |
| <b>Table 10.</b> Lengths and weights of BFT (November 2019 Analysis)( Raw Data).....                                                                  | 44 |
| <b>Table 11.</b> Lengths and weights of BFT (January 2020 Analysis)( Raw Data).....                                                                   | 51 |

## **List Of Figures**

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| <b>Fig 1.</b> Temperature and dissolved oxygen.....                        | 23 |
| <b>Fig 2.</b> Length distrubitions are seen in below ( July 2019).....     | 25 |
| <b>Fig 3.</b> Length distrubitions are seen in below (September 2019)..... | 25 |
| <b>Fig 4.</b> Length distrubitions are seen in below (November 2019) ..... | 26 |
| <b>Fig 5.</b> Length distrubitions are seen in below (January 2020).....   | 26 |
| <b>Fig 6.</b> Weight Distrubitions are seen in below (July 2019).....      | 27 |
| <b>Fig 7.</b> Weight Distrubitions are seen in below (September 2019)..... | 27 |
| <b>Fig 8.</b> Weight Distrubitions are seen in below (November 2019).....  | 28 |
| <b>Fig 9.</b> Weight Distrubitions are seen in below (January 2019).....   | 28 |

## Introduction

Bft Growth Study in Farm (**İCCAT gbyy 09/2019-e**) Research on **Akua-Group Su Ürünleri A.Ş Turkey** was conducted under the consultancy of Assoc. Prof **Şükrü YILDIRIM**, PhD of Ege University, Faculty of Fisheries Aquaculture Dept. Bornova/İzmir/ TURKEY

With Akua Group employees;

- **İrfan ANBAR** (general manager),
- **R. Cenk YURTTAŞ** (engineer and manager),
- **Gökhan GÖKÇEK** (engineer and diver)

Between 02.07.2019 – 02.01.2020 in the cage of the company “LBY AKU 2019 001” located in the Gerence Bay - Çeşme / İZMİR / TURKEY Location of the company.

## **FINAL REPORT (consolidated reports)**

This research includes the dates 02.07.2019 - 02.01.2020. LBY AKU 2019 001 cage is used in this study. There are total of 2245 bluefin tuna in this research cage and for the first, second, third and fourth study **684 tuna fish were** measured (02.07.2019, 02.09.2019, 02.11.2019 and 02.01.2020). Measured fish are approximately % 30 of the total fish in the cage.

The aim of this study was to determine growth of Bluefin tuna in the experimental cage; out of 2245 total fish stocked in cage # **LBY AKU 2019 001**, 684 fish were randomly selected and measured (with Dual Camera AQ-01). Measurements were exercised on **July 2-2019, September 2-2019, November 2-2019 and January 2-2020**. These 684 fish were separated into size groups according to ICCAT's tuna aquaculture growth table.

After the size separation given in **Table 1**, largest group (30-42,99 kg) was **Group 1** with 175 fish. On the other hand, smallest was **Group 6** (107-124,99 kg) with 30 fish. Groups with less than 30 fish were not included in the study due to statistical insignificance. There were total 624 fish in groups 1 to 6. **This 6 groups were classified according to ICCAT's tuna aquaculture growth table.** Although 684 fish were measured on July-2019 (first measurement), only 624 could be included in groups with more than 30 fish. Therefore, heaviest 60 fish were embraced in other fish **and 60 fish (125-285,16kg) were evaluated in Group 7**. With this; 684 fish were measured and evaluated.

Fourth measurement was performed on **January 2-2020**. A total of 684 fish were measured and were grouped from lightest to the heaviest. In the first measurement (performed on July 2-2019) and second measurement (September 2-2019); lightest 175 fish formed the 1st group. Measured fish were fewest in numbers in Group 6 (594-624) with 30 fish. Therefore, fish above 624 were excluded from the study. Including 60 fish (214,11-392,39 kg) in Group 7. 684 fish were measured by stereoscopic camera systems in total.

**July 2-2019 and January 2-2020** measurements (group number, number of sampling, sampling sizes, mean weight) are given in **Table 1** and the measurement at **July 2019, September 2019, November 2019, January 2020** given **Table 2, Table 3 and Table 4**.

**Table 1. Weight Measurement Comparison July 2, 2019 and January 2, 2020**

|                     | <b>02/07/2019 Analysis</b>    |                            |                         | <b>02/01/2020 Analysis</b> |                         |                 |
|---------------------|-------------------------------|----------------------------|-------------------------|----------------------------|-------------------------|-----------------|
| <b>Group number</b> | <b>Number of Sampled Fish</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>% Growth</b> |
| <b>1</b>            | 175                           | 30-42,99                   | <b>36,93</b>            | 64,77-76,04                | <b>70,50</b>            | <b>90,9</b>     |
| <b>2</b>            | 159                           | 43-56,99                   | <b>49,99</b>            | 76,04-100,95               | <b>91,26</b>            | <b>85,5</b>     |
| <b>3</b>            | 119                           | 57-72,99                   | <b>63,66</b>            | 101,29-124,09              | <b>114,13</b>           | <b>79,2</b>     |
| <b>4</b>            | 89                            | 73-90,99                   | <b>82,06</b>            | 124,17-150,83              | <b>141,96</b>           | <b>72,9</b>     |
| <b>5</b>            | 52                            | 91-106,99                  | <b>97,15</b>            | 151,09-166,71              | <b>159,99</b>           | <b>64,6</b>     |
| <b>6</b>            | 30                            | 107-124,99                 | <b>115,80</b>           | 167,14-213,21              | <b>182,41</b>           | <b>57,5</b>     |
| <b>7*</b>           | 60                            | 125-285,16                 | <b>164,14</b>           | 214,11-392,39              | <b>237,79</b>           | <b>44,8</b>     |

\* Group 7 unites all groups of ICCAT's tuna aquaculture growth table as 214,11-392,39 kg in order to have significant number of fish in the group at first (02.01.2020).



**Table 2. Weight Measurement Comparison July 2, 2019 and September 2, 2019**

|                     | <b>02/07/2019 Analysis</b>    |                            |                         | <b>02/09/2019 Analysis</b> |                         |                 |
|---------------------|-------------------------------|----------------------------|-------------------------|----------------------------|-------------------------|-----------------|
| <b>Group number</b> | <b>Number of Sampled Fish</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>% Growth</b> |
| <b>1</b>            | 175                           | 30-42,99                   | <b>36,93</b>            | 41,73-53,47                | <b>47,89</b>            | <b>29,6</b>     |
| <b>2</b>            | 159                           | 43-56,99                   | <b>49,99</b>            | 53,86-71,07                | <b>63,61</b>            | <b>27,2</b>     |
| <b>3</b>            | 119                           | 57-72,99                   | <b>63,66</b>            | 71,46-89,22                | <b>79,78</b>            | <b>25,3</b>     |
| <b>4</b>            | 89                            | 73-90,99                   | <b>82,06</b>            | 89,29-110,62               | <b>100,6</b>            | <b>22,5</b>     |
| <b>5</b>            | 52                            | 91-106,99                  | <b>97,15</b>            | 110,79-128,71              | <b>118,53</b>           | <b>21,9</b>     |
| <b>6</b>            | 30                            | 107-124,99                 | <b>115,80</b>           | 129,34-157,72              | <b>140,30</b>           | <b>21,1</b>     |
| <b>*7</b>           | 60                            | 125-285,16                 | <b>164,14</b>           | 161,14-312,48              | <b>191,95</b>           | <b>16,9</b>     |

\* Group 7 unites all groups of ICCAT's tuna aquaculture growth table as 161,14-312,48 kg in order to have significant number of fish in the group at first (02.09.2019).

**Table 3. Weight Measurement Comparison September 2, 2019 and November 2, 2019**

|                     | <b>02/09/2019 Analysis</b>    |                            |                         | <b>02/11/2019 Analysis</b> |                         |                 |
|---------------------|-------------------------------|----------------------------|-------------------------|----------------------------|-------------------------|-----------------|
| <b>Group number</b> | <b>Number of Sampled Fish</b> | <b>Sampling Sizes (kg)</b> | <b>Mean Weight (kg)</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>% Growth</b> |
| <b>1</b>            | 175                           | 41,73-53,47                | <b>47,89</b>            | 52,74-65,99                | <b>60,88</b>            | <b>27,1</b>     |
| <b>2</b>            | 159                           | 53,86-71,07                | <b>63,61</b>            | 66,01-90,61                | <b>79,08</b>            | <b>24,3</b>     |
| <b>3</b>            | 119                           | 71,46-89,22                | <b>79,78</b>            | 90,79-110,57               | <b>99,01</b>            | <b>24,1</b>     |
| <b>4</b>            | 89                            | 89,29-110,62               | <b>100,6</b>            | 111,06-131,77              | <b>123,1</b>            | <b>22,3</b>     |
| <b>5</b>            | 52                            | 110,79-128,71              | <b>118,53</b>           | 132,23-152,94              | <b>142,39</b>           | <b>20,1</b>     |
| <b>6</b>            | 30                            | 129,34-157,72              | <b>140,30</b>           | 153,27-173,94              | <b>164,43</b>           | <b>17,2</b>     |
| <b>7*</b>           | 60                            | 161,14-312,48              | <b>191,95</b>           | 174,68-355,331             | <b>218,03</b>           | <b>13,5</b>     |

\* Group 7 unites all groups of ICCAT's tuna aquaculture growth table as 174,68-355,331 kg in order to have significant number of fish in the group at first (02.11.2019).

**Table 4. Weight Measurement Comparison November 2, 2019 and January 2, 2020**

|                     | <b>02/11/2019 Analysis</b>    |                            |                         | <b>02/01/2020 Analysis</b> |                         |                 |
|---------------------|-------------------------------|----------------------------|-------------------------|----------------------------|-------------------------|-----------------|
| <b>Group number</b> | <b>Number of Sampled Fish</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>Max-Min Weight (kg)</b> | <b>Mean Weight (kg)</b> | <b>% Growth</b> |
| <b>1</b>            | 175                           | 52,74-65,99                | <b>60,88</b>            | 64,77-76,04                | <b>70,50</b>            | <b>15,8</b>     |
| <b>2</b>            | 159                           | 66,01-90,61                | <b>79,08</b>            | 76,04-100,95               | <b>91,26</b>            | <b>15,4</b>     |
| <b>3</b>            | 119                           | 90,79-110,57               | <b>99,01</b>            | 101,29-124,09              | <b>114,13</b>           | <b>15,2</b>     |
| <b>4</b>            | 89                            | 111,06-131,77              | <b>123,1</b>            | 124,17-150,83              | <b>141,96</b>           | <b>15,3</b>     |
| <b>5</b>            | 52                            | 132,23-152,94              | <b>142,39</b>           | 151,09-166,71              | <b>159,99</b>           | <b>12,3</b>     |
| <b>6</b>            | 30                            | 153,27-173,94              | <b>164,43</b>           | 167,14-213,21              | <b>182,41</b>           | <b>10,9</b>     |
| <b>7*</b>           | 60                            | 174,68-355,331             | <b>218,03</b>           | 214,11-392,39              | <b>237,79</b>           | <b>9</b>        |

\* Group 7 unites all groups of ICCAT's tuna aquaculture growth table as 214,11-392,39 kg in order to have significant number of fish in the group at first (02.01.2020).

**July 2-2019** and **January 2-2020** analysis are given in **Table 5**. **January 2-2020** maximum measured weight is 392,39 kg and mean weight is 118,605 kg. The mean weight is %70,21 changed in six months (**July 2-2019** to **January 2-2020**).

**Table 5. Weight Measurement (mean weight, number of sampled fish, maximum and minimum weight) comparison July 2 , 2019 and January 2 , 2020.**

|                              | <b>02/07/2019 Analysis</b> | <b>02/01/2020 Analysis</b> |                 |
|------------------------------|----------------------------|----------------------------|-----------------|
| <b>Numer of sampled fish</b> | <b>684</b>                 | <b>684</b>                 | <b>% Growth</b> |
| <b>Mean weight (kg)</b>      | <b>69,68</b>               | <b>118,605</b>             | <b>70,21</b>    |
| <b>Minimum weight (kg)</b>   | <b>31,27</b>               | <b>64,77</b>               | <b>107,13*</b>  |
| <b>Maksimum weight (kg)</b>  | <b>285,16</b>              | <b>392,392</b>             | <b>37,6*</b>    |

\* Taking into account that the the maximum and minimum values might not give a statically reliable outcome due to their lack of individuals as samples.

As seen in **AQ1 AM 100 REPORT**, the mean weight is 69,686 kg, minimum weight is 31,277 kg and maximum weight is 285,165 kg in the study performed in **02.07.2019**.

## **AQ1 Systems AM100 Report**

**JULY 2019**

### **General Information**

Species: T. Thynnus wild (Tzoumas 2009)

Site:

Cage:

Recording date: 7/2/2019 10:33:51 AM

Comments:

Recording folder: C:\AM100\REFIK USTA TUR-2019\_AUT\_215 02.07.2019 11\_00

Project filename: 02.07.2019 refik usta.AQAM

### **Sizing statistical Information**

Mean weight (kg): 69.686

Minimum weight (kg): 31.277

Maximum weight (kg): 285.165

Weight S.D. (kg): 38.125

Weight CV (%): 54.710

Sample size (weight): 684

Samples out of formula range: 0

-----  
Mean FL (m) : 1.462

Minimum FL (m) : 1.166

Maximum FL (m) : 2.335

FL S.D. (m) : 0.222

FL CV (%): 15.203

Sample size (FL): 684

As seen in **AQ1 AM 100 REPORT**, the mean weight is 86,012 kg, minimum weight is 41,731 kg and maximum weight is 312,487 kg in the study performed in **02.09.2019**.

## **AQ1 Systems AM100 Report**

**SEPTEMBER 2019**

### **General Information**

Species: T. Thynnus fattened (Tzoumas 2009)  
Site:  
Cage:  
Recording date: 9/2/2019 11:12:56 AM  
Comments:  
Recording folder: C:\Documents and Settings\Administrator\Desktop\02.09.2019 iccat proje\02.09.2019 gerence 6  
Project filename: 02.06.2019 LBY AKU 2019 001.AQAM

### **Sizing statistical Information**

Mean weight (kg): 86.012  
Minimum weight (kg): 41.731  
Maximum weight (kg): 312.487  
Weight S.D. (kg): 42.651  
Weight CV (%): 49.587  
Sample size (weight): 684  
Samples out of formula range: 0

-----  
Mean FL (m) : 1.568  
Minimum FL (m) : 1.277  
Maximum FL (m) : 2.403  
FL S.D. (m) : 0.220  
FL CV (%): 14.062  
Sample size (FL): 684

As seen in **AQ1 AM 100 REPORT**, the mean weight is 104,367 kg, minimum weight is 52,747 kg and maximum weight is 355,331 kg in the study performed in **02.11.2019**.

## **AQ1 Systems AM100 Report**

**NOVEMBER 2019**

### **General Information**

Species: T. Thynnus fattened (Tzoumas 2009)  
Site:  
Cage:  
Recording date: 11/2/2019 10:41:41 AM  
Comments:  
Recording folder: C:\Documents and Settings\Administrator\Desktop\02.11.2019 ICCAT PROJECT\02.11.2019  
Project filename: LBY AKU 2019 001 02.11.2019.AQAM

### **Sizing statistical Information**

Mean weight (kg): 104.367  
Minimum weight (kg): 52.747  
Maximum weight (kg): 355.331  
Weight S.D. (kg): 47.478  
Weight CV (%): 45.491  
Sample size (weight): 684  
Samples out of formula range: 0

-----  
Mean FL (m) : 1.671  
Minimum FL (m) : 1.374  
Maximum FL (m) : 2.502  
FL S.D. (m) : 0.217  
FL CV (%): 12.991  
Sample size (FL): 684

As seen in **AQ1 AM 100 REPORT**, the mean weight is 118,605 kg, minimum weight is 64,770 kg and maximum weight is 392,392 kg in the study performed in **02.01.2020**.

## **AQ1 Systems AM100 Report**

**JANUARY 2020**

### **General Information**

Species: T. Thynnus fattened (Tzoumas 2009)

Site:

Cage:

Recording date: 1/2/2020 9:57:10 AM

Comments:

Recording folder: C:\AM100\02.January.2020 ICCAT

Project filename: January Analysis.AQAM

### **Sizing statistical Information**

Mean weight (kg): 118.605

Minimum weight (kg): 64.770

Maximum weight (kg): 392.392

Weight S.D. (kg): 50.103

Weight CV (%): 42.244

Sample size (weight): 684

Samples out of formula range: 0

-----  
Mean FL (m) : 1.743

Minimum FL (m) : 1.466

Maximum FL (m) : 2.582

FL S.D. (m) : 0.215

FL CV (%): 12.358

Sample size (FL): 684



At the end of the of the fourth study, the mean weight of the bluefin tuna in the experimental cage is 118,60 kg and the total weight is 266,268 kg. As seen in **Table 6:** in the months July 2019 to January 2020, total 2072850 kg bait was given to the bft. 75,38 % of the bait was frozen Mackerel , 14,56 % was frozen Sardine and 10,05 % Mixed Fresh anchovy/sardine.

**Table6. Feeding Types and Water Conditions**

| DATE       | FEEDING  | QUANTITY<br>*kg | TEMPERATURE<br>°C | O2<br>*ppm |
|------------|----------|-----------------|-------------------|------------|
| 01/07/2019 | -        | -               | 22.8              | 7.2        |
| 02/07/2019 | -        | -               | 22.9              | 7.3        |
| 03/07/2019 | MACKEREL | 150             | 23.4              | 7.7        |
| 04/07/2019 | MACKEREL | 100             | 23.2              | 7          |
| 05/07/2019 | MACKEREL | 100             | 23.1              | 6.9        |
| 06/07/2019 | MACKEREL | 300             | 21                | 7          |
| 07/07/2019 | SARDINE  | 1400            | 23.5              | 6.9        |
| 08/07/2019 | SARDINE  | 600             | 23.8              | 7          |
| 09/07/2019 | SARDINE  | 2000            | 23.7              | 6.9        |
| 10/07/2019 | MACKEREL | 2000            | 25.4              | 7.1        |
| 11/07/2019 | MACKEREL | 1200            | 24.6              | 7.5        |
| 12/07/2019 | MACKEREL | 5500            | 22.5              | 7.2        |
| 13/07/2019 | MACKEREL | 4000            | 22.6              | 7.7        |
| 14/07/2019 | MACKEREL | 6200            | 22.9              | 7.8        |
| 15/07/2019 | MACKEREL | 7500            | 22.8              | 7.1        |
| 16/07/2019 | MACKEREL | 9000            | 23.1              | 7.2        |
| 17/07/2019 | MACKEREL | 8000            | 24.1              | 7          |
| 18/07/2019 | MACKEREL | 9600            | 24                | 7          |
| 19/07/2019 | MACKEREL | 10400           | 22.3              | 7.8        |
| 20/07/2019 | MACKEREL | 11800           | 24.1              | 7.6        |
| 21/07/2019 | MACKEREL | 12500           | 24.2              | 7.4        |
| 22/07/2019 | MACKEREL | 9200            | 23.8              | 7.5        |

|            |          |       |      |     |
|------------|----------|-------|------|-----|
| 23/07/2019 | MACKEREL | 15400 | 23.5 | 8.7 |
| 24/07/2019 | SARDINE  | 12000 | 23.1 | 7.1 |
| 25/07/2019 | MACKEREL | 13000 | 21.8 | 8.2 |
| 26/07/2019 | MACKEREL | 11200 | 23.2 | 8.1 |
| 27/07/2019 | MACKEREL | 14000 | 22.8 | 7.8 |
| 28/07/2019 | MACKEREL | 13000 | 23.1 | 7.6 |
| 29/07/2019 | MACKEREL | 12000 | 23.0 | 7.9 |
| 30/07/2019 | MACKEREL | 14000 | 24.1 | 8.2 |
| 31/07/2019 | MACKEREL | 14000 | 24.2 | 7.9 |
| 01/08/2019 | MACKEREL | 18000 | 23.8 | 7.4 |
| 02/08/2019 | MACKEREL | 18000 | 24.1 | 7.8 |
| 03/08/2019 | MACKEREL | 19200 | 24.3 | 7.9 |
| 04/08/2019 | -        | -     | 23.9 | 7.9 |
| 05/08/2019 | MACKEREL | 17000 | 23.6 | 8.6 |
| 06/08/2019 | MACKEREL | 18000 | 23.1 | 7.5 |
| 07/08/2019 | SARDINE  | 18800 | 22.3 | 8.7 |
| 08/08/2019 | SARDINE  | 18600 | 22.4 | 8.2 |
| 09/08/2019 | SARDINE  | 18000 | 22.9 | 8.1 |
| 10/08/2019 | MACKEREL | 19400 | 22.4 | 7.5 |
| 11/08/2019 | -        | -     | 23.4 | 8.7 |
| 12/08/2019 | MACKEREL | 19200 | 23.7 | 7.7 |
| 13/08/2019 | MACKEREL | 19200 | 23.8 | 7.4 |
| 14/08/2019 | MACKEREL | 19200 | 22.4 | 8.6 |
| 15/08/2019 | MACKEREL | 19800 | 22.1 | 8.8 |
| 16/08/2019 | MACKEREL | 19800 | 22.6 | 7.8 |
| 17/08/2019 | MACKEREL | 15200 | 23.4 | 7.3 |
| 18/08/2019 | -        | -     | 22.7 | 7.4 |
| 19/08/2019 | MACKEREL | 18000 | 23.4 | 7.9 |
| 20/08/2019 | SARDINE  | 18000 | 22.6 | 8.2 |
| 21/08/2019 | MACKEREL | 17000 | 22.5 | 8.2 |

|            |          |        |      |     |
|------------|----------|--------|------|-----|
| 22/08/2019 | MACKEREL | 17000  | 22.8 | 8.1 |
| 23/08/2019 | MACKEREL | 16000  | 22.5 | 7.9 |
| 24/08/2019 | MACKEREL | 16000  | 22.8 | 7.6 |
| 25/08/2019 | -        | -      | 23.4 | 6.8 |
| 26/08/2019 | MACKEREL | 16000  | 23.1 | 7.1 |
| 27/08/2019 | MACKEREL | 16000  | 23.9 | 6.5 |
| 28/08/2019 | MACKEREL | 15000  | 23.6 | 6.7 |
| 29/08/2019 | MACKEREL | 15000  | 24.1 | 7.7 |
| 30/08/2019 | MACKEREL | 14000  | 24.3 | 8.2 |
| 31/08/2019 | MACKEREL | 14800  | 24.1 | 8.1 |
| 01/09/2019 | -        | -      | 23,1 | 7,4 |
| 02/09/2019 | MACKEREL | 15.200 | 22,9 | 7,1 |
| 03/09/2019 | SARDINE  | 12.800 | 22,8 | 7,7 |
| 04/09/2019 | MACKEREL | 15.200 | 23,3 | 7,6 |
| 05/09/2019 | MACKEREL | 14.000 | 23,4 | 7,1 |
| 06/09/2019 | SARDINE  | 12.700 | 23,7 | 6,8 |
| 07/09/2019 | MACKEREL | 14.000 | 23,1 | 7,7 |
| 08/09/2019 | MACKAREL | 14.400 | 22,9 | 7,2 |
| 09/09/2019 | MACKAREL | 14.400 | 22,8 | 7,7 |
| 10/09/2019 | SARDINE  | 12.800 | 23,1 | 7,9 |
| 11/09/2019 | MACKEREL | 14.000 | 22,7 | 8,2 |
| 12/09/2019 | MACKAREL | 14.200 | 22,6 | 8,8 |
| 13/09/2019 | MACKAREL | 12.600 | 22,5 | 7,9 |
| 14/09/2019 | MACKEREL | 12.600 | 22,9 | 7,2 |
| 15/09/2019 | SARDINE  | 11.800 | 23   | 7,6 |
| 16/09/2019 | SARDINE  | 11.800 | 23,1 | 7,3 |
| 17/09/2019 | MACKEREL | 14.000 | 23,1 | 7,5 |
| 18/09/2019 | MACKEREL | 14.000 | 23,2 | 7,7 |
| 19/09/2019 | MACKEREL | 13.000 | 22,3 | 6,9 |
| 20/09/2019 | FRESH    | 10.600 | 22,6 | 6,3 |

|            |          |        |      |      |
|------------|----------|--------|------|------|
| 21/09/2019 | FRESH    | 11.000 | 22,5 | 6,6  |
| 22/09/2019 | -        | -      | 22,4 | 7,2  |
| 23/09/2019 | MACKEREL | 12.400 | 22,5 | 7,3  |
| 24/09/2019 | MACKEREL | 12.000 | 22,1 | 7,2  |
| 25/09/2019 | MACKEREL | 12.800 | 21,8 | 7,1  |
| 26/09/2019 | FRESH    | 10.600 | 21,5 | 7,7  |
| 27/09/2019 | FRESH    | 11.800 | 21,6 | 7,2, |
| 28/09/2019 | MACKEREL | 14.600 | 21,7 | 7,2  |
| 29/09/2019 | SARDINE  | 13.800 | 21,5 | 7,9  |
| 30/09/2019 | SARDINE  | 13.800 | 21,8 | 7,7  |
| 01/10/2019 | MACKEREL | 14.600 | 21,2 | 8,3  |
| 02/10/2019 | MACKEREL | 14.600 | 21,8 | 8,1  |
| 03/10/2019 | FRESH    | 10.600 | 22,3 | 7,2  |
| 04/10/2019 | FRESH    | 10.000 | 22,4 | 7    |
| 05/10/2019 | MACKEREL | 13.600 | 22,5 | 8,1  |
| 06/10/2019 | MACKEREL | 15.000 | 22   | 7,6  |
| 07/10/2019 | MACKEREL | 15.200 | 21,7 | 7,4  |
| 08/10/2019 | MACKEREL | 15.200 | 21,8 | 7,2  |
| 09/10/2019 | FRESH    | 13.400 | 21,6 | 7,3  |
| 10/10/2019 | FRESH    | 13.400 | 21,2 | 7,4  |
| 11/10/2019 | FRESH    | 13.000 | 21,3 | 7,2  |
| 12/10/2019 | MACKEREL | 15.800 | 21,5 | 7,6  |
| 13/10/2019 | -        | -      | 21,7 | 8,4  |
| 14/10/2019 | MACKEREL | 14.800 | 21,1 | 8,1  |
| 15/10/2019 | MACKEREL | 15.000 | 21,3 | 7,8  |
| 16/10/2019 | MACKEREL | 15.000 | 21,2 | 7,9  |
| 17/10/2019 | MACKEREL | 15.600 | 21,8 | 7,4  |
| 18/10/2019 | FRESH    | 12.400 | 22,1 | 7,1  |
| 19/10/2019 | SARDINE  | 13.000 | 22,3 | 7,6  |
| 20/10/2019 | SARDINE  | 13.600 | 22,5 | 8    |

|            |          |        |      |     |
|------------|----------|--------|------|-----|
| 21/10/2019 | MACKEREL | 14.000 | 22,1 | 8,1 |
| 22/10/2019 | MACKEREL | 12.800 | 21,4 | 7,3 |
| 23/10/2019 | MACKEREL | 12.800 | 21,5 | 7   |
| 24/10/2019 | MACKEREL | 12.000 | 21,1 | 7,2 |
| 25/10/2019 | MACKAREL | 12.000 | 21,3 | 7,3 |
| 26/10/2019 | FRESH    | 11.400 | 21,2 | 7,6 |
| 27/10/2019 | -        | -      | 21   | 7,1 |
| 28/10/2019 | MACKEREL | 12.000 | 21,2 | 7,2 |
| 29/10/2019 | FRESH    | 11.000 | 21,5 | 7,8 |
| 30/10/2019 | MACKEREL | 12.800 | 21,3 | 7,7 |
| 31/10/2019 | MACKEREL | 12.000 | 21,4 | 7,1 |
| 01/11/2019 | MACKAREL | 12.000 | 21,5 | 7,3 |
| 02/11/2019 | -        | -      | 21,3 | 7,3 |
| 03/11/2019 | MACKEREL | 14.000 | 21,1 | 7,2 |
| 04/11/2019 | MACKEREL | 14.000 | 20,7 | 7,3 |
| 05/11/2019 | MACKEREL | 14.200 | 20,3 | 7,7 |
| 06/11/2019 | MACKEREL | 14.600 | 20,2 | 7,4 |
| 07/11/2019 | FRESH    | 12.000 | 20,1 | 7,3 |
| 08/11/2019 | FRESH    | 12.000 | 20,5 | 7,1 |
| 09/11/2019 | MACKAREL | 14.800 | 20,6 | 6,9 |
| 10/11/2019 | MACKAREL | 14.800 | 20,2 | 7,5 |
| 11/11/2019 | FRESH    | 12.000 | 20,6 | 7,9 |
| 12/11/2019 | MACKEREL | 14.600 | 20,1 | 8,1 |
| 13/11/2019 | MACKAREL | 14.600 | 20,7 | 8,2 |
| 14/11/2019 | MACKAREL | 14.000 | 20,3 | 7,6 |
| 15/11/2019 | MACKEREL | 14.800 | 20,5 | 7,3 |
| 16/11/2019 | MACKEREL | 14.400 | 20,1 | 7,1 |
| 17/11/2019 | -        | -      | 19,9 | 7,7 |
| 18/11/2019 | SARDINE  | 12.000 | 20,2 | 7,8 |
| 19/11/2019 | SARDINE  | 12.000 | 20,4 | 8,1 |

|            |          |        |      |     |
|------------|----------|--------|------|-----|
| 20/11/2019 | MACKEREL | 14.500 | 20,0 | 7,3 |
| 21/11/2019 | MACKEREL | 14.000 | 20,6 | 7,7 |
| 22/11/2019 | MACKEREL | 12.000 | 20,7 | 8,1 |
| 23/11/2019 | FRESH    | 11.200 | 20,2 | 7,9 |
| 24/11/2019 | -        | -      | 20,7 | 7,2 |
| 25/11/2019 | MACKAREL | 14.000 | 20,3 | 7,2 |
| 26/11/2019 | SARDINE  | 13.200 | 20,0 | 7,6 |
| 27/11/2019 | SARDINE  | 13.200 | 19,7 | 7,3 |
| 28/11/2019 | MACKEREL | 14.000 | 19,8 | 7,4 |
| 29/11/2019 | FRESH    | 11.000 | 19,5 | 8,2 |
| 30/11/2019 | FRESH    | 11.000 | 19,4 | 7,9 |
| 01/12/2019 | -        | -      | 19,5 | 7,5 |
| 02/12/2019 | MACKEREL | 12.000 | 19,7 | 8,2 |
| 03/12/2019 | MACKEREL | 12.200 | 19,8 | 7,3 |
| 04/12/2019 | SARDINE  | 11.000 | 19,9 | 7,7 |
| 05/12/2019 | SARDINE  | 11.000 | 19,6 | 7,9 |
| 06/12/2019 | MACKEREL | 12.600 | 19,1 | 8,4 |
| 07/12/2019 | MACKEREL | 12.000 | 19,2 | 7,1 |
| 08/12/2019 | -        | -      | 19,0 | 7,9 |
| 09/12/2019 | MACKAREL | 10.000 | 19,2 | 7,2 |
| 10/12/2019 | MACKEREL | 10.200 | 18,9 | 7,5 |
| 11/12/2019 | MACKEREL | 10.800 | 18,5 | 7,2 |
| 12/12/2019 | MACKEREL | 10.800 | 18,7 | 7,1 |
| 13/12/2019 | MACKEREL | 10.600 | 18,5 | 7,9 |
| 14/12/2019 | MACKEREL | 10.000 | 18,2 | 7,3 |
| 15/12/2019 | -        | -      | 18,9 | 7,9 |
| 16/12/2019 | MACKEREL | 10.000 | 18,7 | 8,5 |
| 17/12/2019 | MACKEREL | 8.600  | 18,5 | 7,8 |
| 18/12/2019 | MACKEREL | 9.400  | 18,3 | 7,2 |
| 19/12/2019 | SARDINE  | 8.000  | 18,0 | 7,5 |

|              |          |                |      |     |
|--------------|----------|----------------|------|-----|
| 20/12/2019   | SARDINE  | 8.000          | 18,2 | 7,8 |
| 21/12/2019   | MACKEREL | 9.000          | 18,6 | 8,2 |
| 22/12/2019   | SARDINE  | 8.000          | 18,4 | 8   |
| 23/12/2019   | MACKEREL | 8.000          | 18,3 | 7,5 |
| 24/12/2019   | MACKEREL | 8.200          | 18,2 | 7,2 |
| 25/12/2019   | MACKEREL | 9.000          | 18,3 | 7,5 |
| 26/12/2019   | MACKAREL | 8.200          | 17,9 | 7,2 |
| 27/12/2019   | MACKEREL | 8.000          | 17,6 | 7,6 |
| 28/12/2019   | MACKEREL | 7.700          | 17,5 | 7,7 |
| 29/12/2019   | MACKEREL | 8.900          | 17,3 | 7,2 |
| 30/12/2019   | MACKEREL | 8.900          | 17,6 | 7,9 |
| 31/12/2019   | MACKEREL | 9.000          | 17,4 | 7,2 |
| 01/01/2020   | -        | -              | 17,3 | 7,8 |
| <b>TOTAL</b> | <b>*</b> | <b>2072850</b> |      |     |

\*75,38 % Frozen Mackerel, 14,56 % Frozen Sardine, 10,05 % Mixed Fresh anchovy/sardine.

Water temperature and dissolved oxygen (July, August, September, October, November, December 2019) are given Fig. 1.

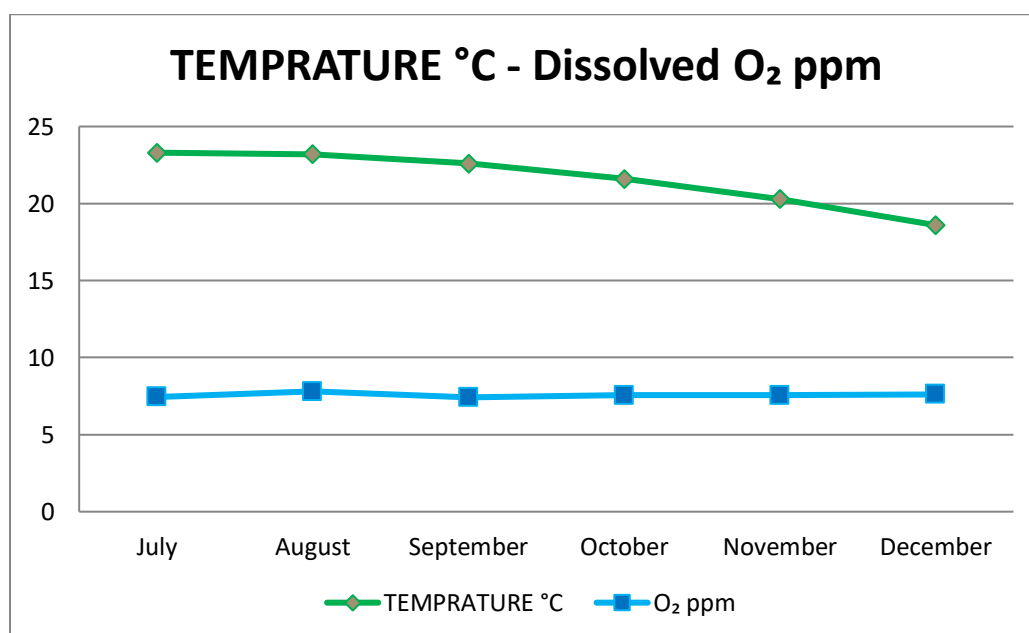


Fig 1. Temperature and dissolved oxygen

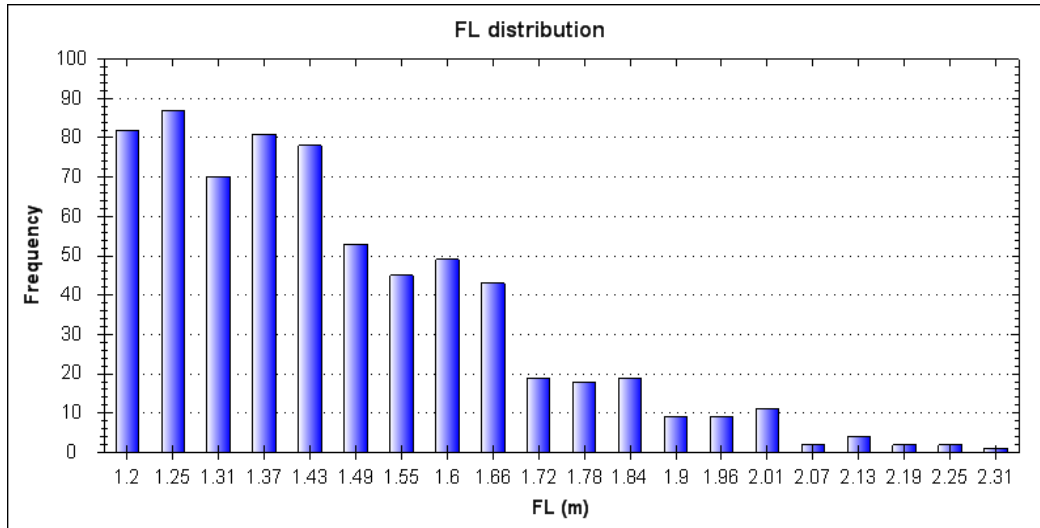
The Bft in the study cage (LBY AKU 2019 001) were fed with 2072850 kg frozen mackerel, sardine and fresh sardine/anchovy for six months (July 2019 and January 2020). The total live weight was increased 113745 kg. Finally, the feed conversion rate for six months is calculated 18,22 kg ( **Table 7** ).

**Table 7. Feed Conversion Rate**

|                                                          |                   |
|----------------------------------------------------------|-------------------|
| <b>02.07.2019 Analysis Cage Total Fish Weight (Mean)</b> | <b>152.523 kg</b> |
| <b>02.01.2020 Analysis Cage Total Fish Weight (Mean)</b> | <b>266,268 kg</b> |
| <b>02.07.2019-02.01.2020 Feeding for Six Months</b>      | <b>2072850 kg</b> |
| <b>Live Weight Increase (Total)</b>                      | <b>113745 kg</b>  |
| <b>FCR (for 6 months)</b>                                | <b>18,22 kg</b>   |

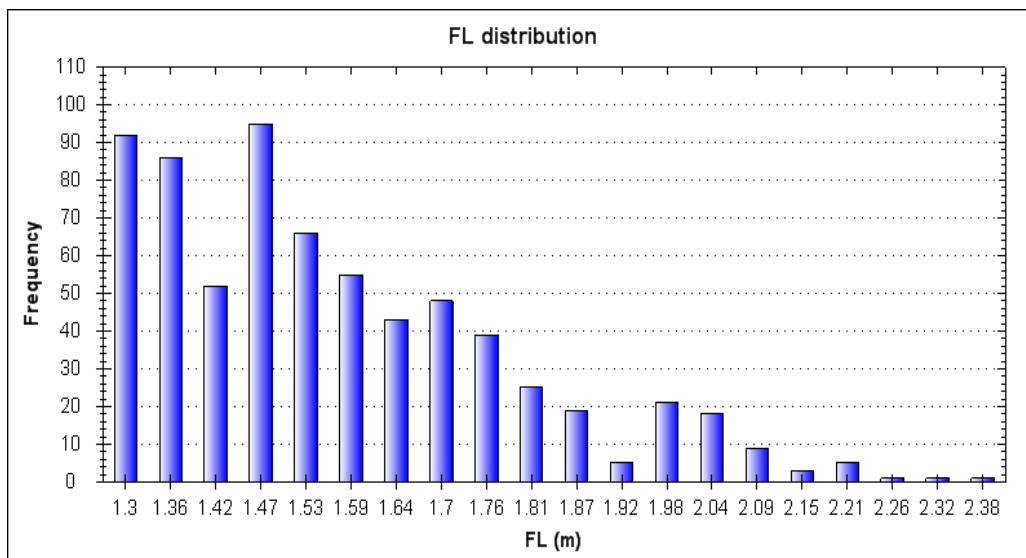


As seen in **Fig. 2**, the main length distribution was seen between 1,2 m and 1,4 m. **(July 2019)**



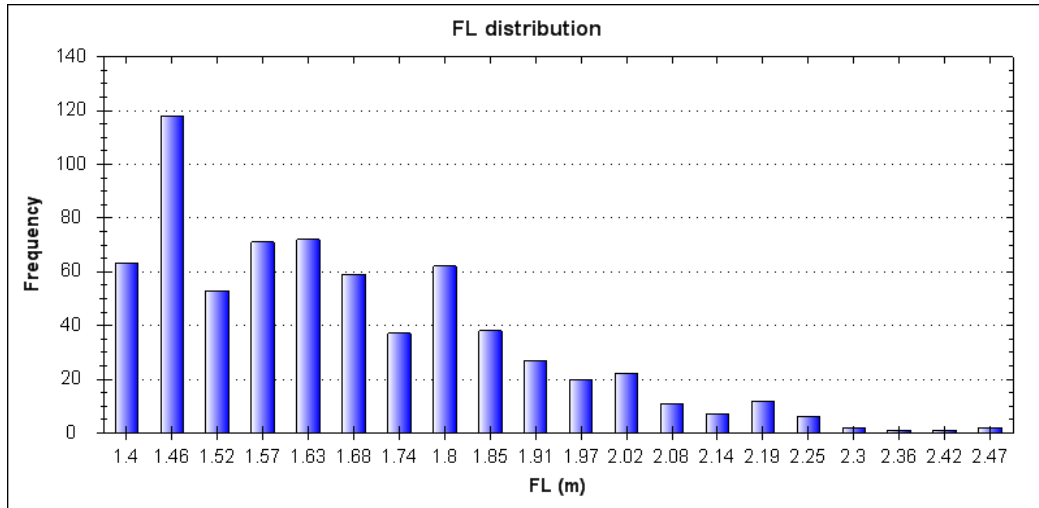
**Fig 2.** Length distrubitions are seen in below ( July 2019)

As seen in **Fig. 3**, the main length distribution was seen between 1,3 m and 1,53 m. **(September 2019)**



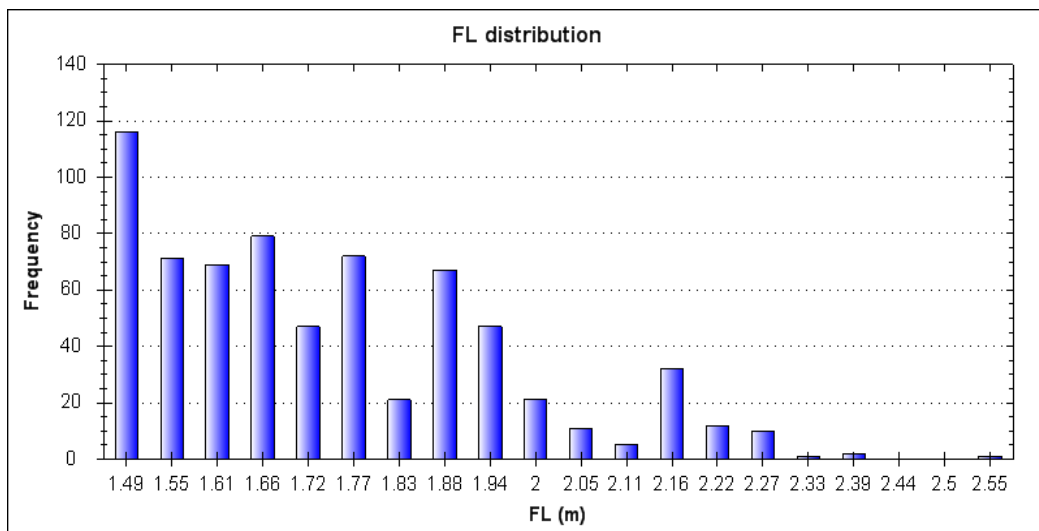
**Fig 3.** Length distrubitions are seen in below (September 2019)

As seen in **Fig. 4**, the main length distribution was seen between 1,46 m and 1,68 m. **(November 2019)**



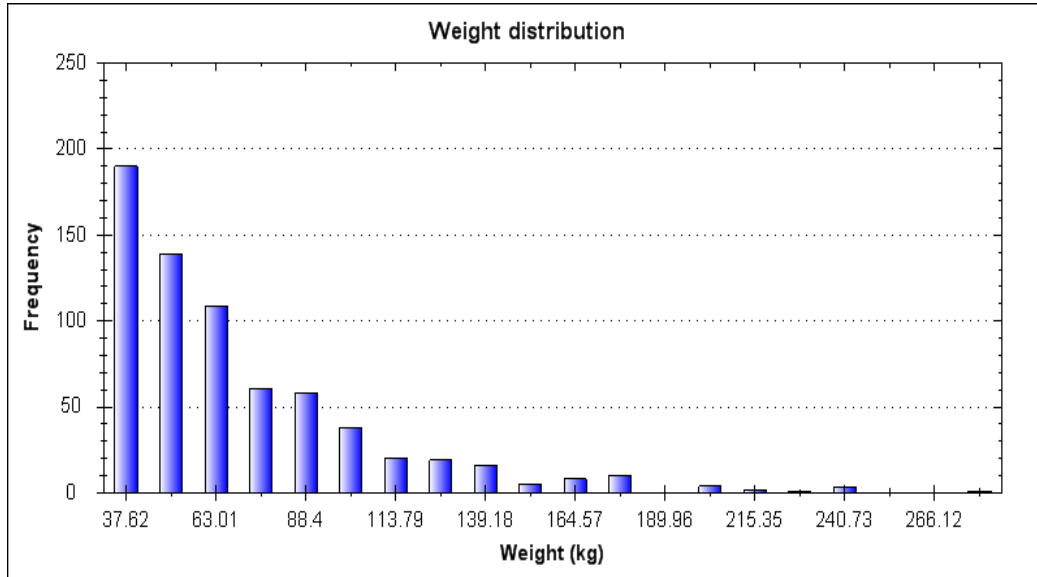
**Fig 4. Length distributions are seen in below (November 2019)**

As seen in **Fig. 5**, the main length distribution was seen between 1,49 m and 1,66 m. **(January 2020)**



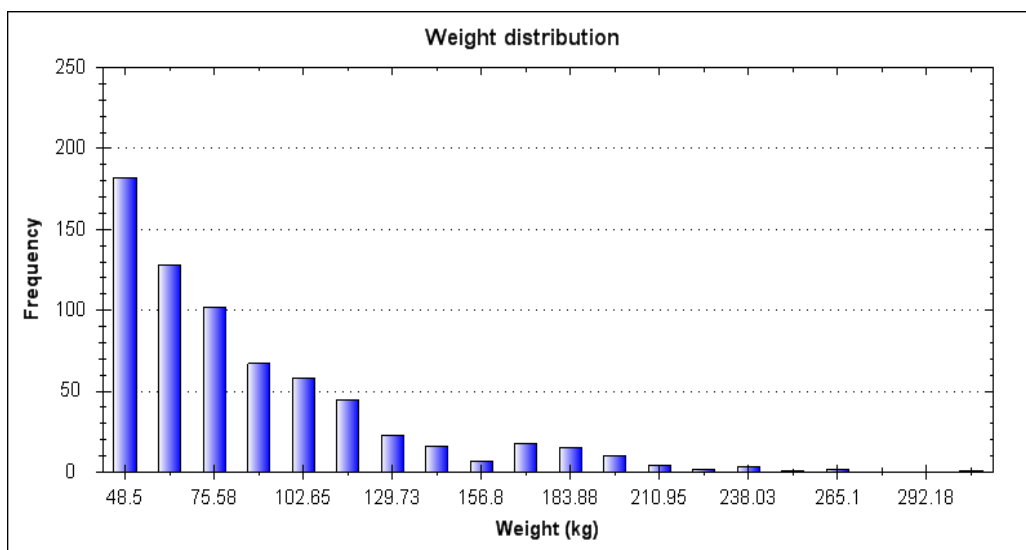
**Fig 5. Length distributions are seen in below (January 2020)**

**Fig. 6** shows the weight distribution of the 684 fish that were measured. The main distribution took place between the weight 40 kg and 60 kg. **(July 2019)**



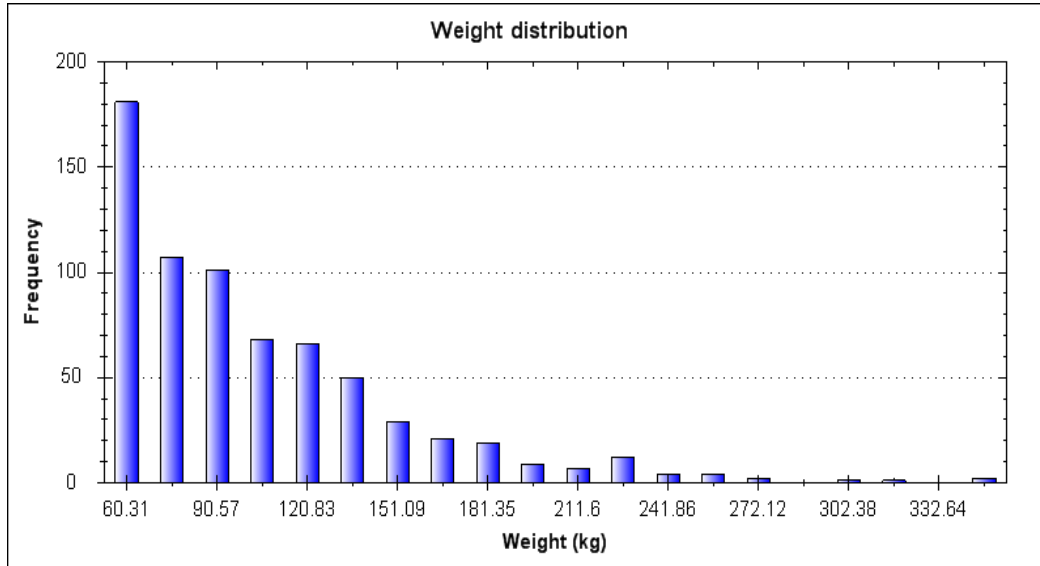
**Fig 6. Weight Distrubitions are seen in below (July 2019)**

**Fig. 7** shows the weight distribution of the 684 fish that were measured. The main distribution took place between the weight 48,5 kg and 75,58 kg. **(September 2019)**



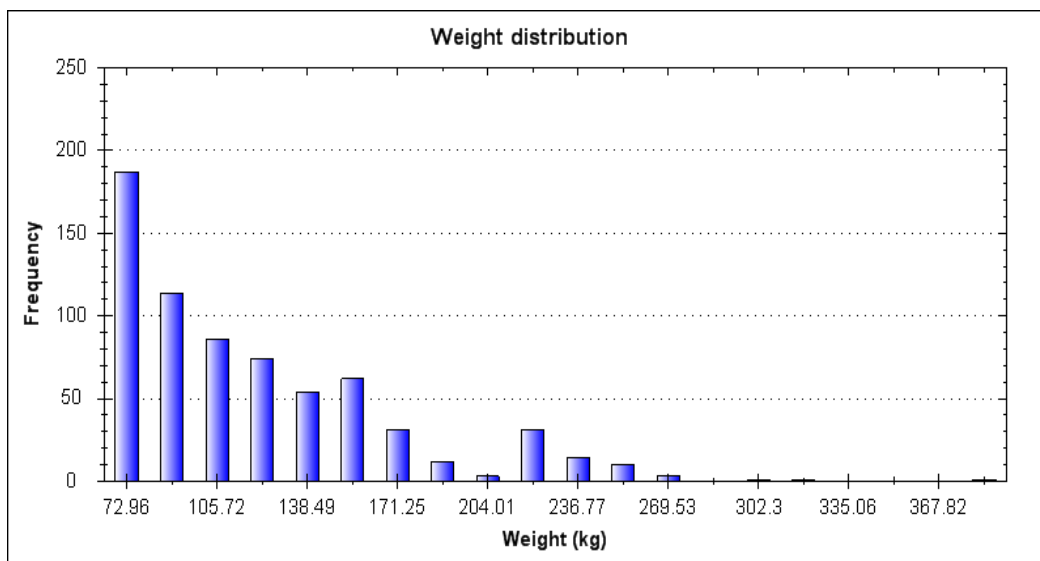
**Fig 7. Weight Distrubitions are seen in below (September 2019)**

**Fig. 8** shows the weight distribution of the 684 fish that were measured. The main distribution took place between the weight 60,31 kg and 90,57 kg. **(November 2019)**



**Fig 8. Weight Distrubitions are seen in below (November 2019)**

**Fig. 9** shows the weight distribution of the 684 fish that were measured. The main distribution took place between the weight 72,96 kg and 105,72 kg. **(January 2020)**



**Fig 9. Weight Distrubitions are seen in below (January 2019)**

### **JULY 2019 Analysis Information**

|                              |                                                                                         |
|------------------------------|-----------------------------------------------------------------------------------------|
| Species                      | T. Thynnus fattened (Tzoumas 2009)                                                      |
| Site                         |                                                                                         |
| Cage                         |                                                                                         |
| Recording date               | 02.07.2019 10:32                                                                        |
| Comments                     |                                                                                         |
| Project folder               | C:\Documents and Settings\Administrator\Desktop\2019 analizler\4-(02.07.2019)Refik usta |
| Datafile folder              | C:\AM100\REFIK USTA TUR-2019_AUT_215 02.07.2019 11_00                                   |
| Calibration filename left    | 20120424_151827_00111CF020A8_Left.Cam                                                   |
| Calibration filename right   | 20120424_151827_00111CF020A3_Right.Cam                                                  |
| Program version              | 1.1.1.12713                                                                             |
| Computer name                | AM100TOUGHBOOK                                                                          |
|                              |                                                                                         |
| Mean weight (kg)             | 69,6863                                                                                 |
| Minimum weight (kg)          | 31,2774                                                                                 |
| Maximum weight (kg)          | 285,165                                                                                 |
| Weight S.D. (kg)             | 38,1254                                                                                 |
| Weight CV (%)                | 54,71                                                                                   |
| Sample size (weight)         | 684                                                                                     |
| Samples out of formula range | 0                                                                                       |
| Mean FL (m)                  | 1,46177                                                                                 |
| Minimum FL (m)               | 1,16593                                                                                 |
| Maximum FL (m)               | 2,33522                                                                                 |
| FL S.D. (m)                  | 0,222231                                                                                |
| FL CV (%)                    | 15,2028                                                                                 |
| Sample size (FL)             | 684                                                                                     |
| Positive Count               | 0                                                                                       |
| Negative Count               | 0                                                                                       |
| Total Count                  | 0                                                                                       |

In **Table 8** raw data of the study performed in 2 July 2019 are given.

**Table 8. Lengths and weights of BFT (JULY 2019 Analysis)(Raw data)**

| ID | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  |
|----|-------------|---------|-----|-------------|---------|-----|-------------|---------|
|    |             |         |     |             |         |     |             |         |
| 1  | 129.137     | 1.82056 | 229 | 93.9057     | 1.64711 | 457 | 83.1449     | 1.5853  |
| 2  | 92.2602     | 1.63799 | 230 | 81.3982     | 1.57476 | 458 | 56.777      | 1.40621 |
| 3  | 86.4983     | 1.60513 | 231 | 78.9716     | 1.55985 | 459 | 79.8138     | 1.56506 |
| 4  | 61.2907     | 1.44042 | 232 | 68.867      | 1.49416 | 460 | 49.2687     | 1.3449  |
| 5  | 90.9725     | 1.63077 | 233 | 91.3644     | 1.63297 | 461 | 31.393      | 1.16728 |
| 6  | 38.4754     | 1.24435 | 234 | 65.0847     | 1.46787 | 462 | 43.2393     | 1.29084 |
| 7  | 96.9236     | 1.66357 | 235 | 47.6604     | 1.33095 | 463 | 38.6576     | 1.2462  |
| 8  | 86.3581     | 1.60431 | 236 | 37.0243     | 1.2294  | 464 | 37.18       | 1.23103 |
| 9  | 67.6541     | 1.48584 | 237 | 48.6875     | 1.3399  | 465 | 34.8197     | 1.20591 |
| 10 | 68.8797     | 1.49425 | 238 | 53.1236     | 1.37712 | 466 | 34.0212     | 1.19715 |
| 11 | 56.4293     | 1.4035  | 239 | 65.2304     | 1.4689  | 467 | 41.8509     | 1.27767 |
| 12 | 59.0677     | 1.4238  | 240 | 53.8676     | 1.38315 | 468 | 49.8164     | 1.34958 |
| 13 | 70.6157     | 1.50598 | 241 | 42.3346     | 1.28229 | 469 | 40.9097     | 1.26857 |
| 14 | 47.3378     | 1.32811 | 242 | 38.171      | 1.24125 | 470 | 39.4995     | 1.25466 |
| 15 | 76.2896     | 1.54301 | 243 | 37.7052     | 1.23647 | 471 | 45.9768     | 1.31599 |
| 16 | 42.1112     | 1.28016 | 244 | 40.8824     | 1.26831 | 472 | 39.1635     | 1.2513  |
| 17 | 41.8384     | 1.27755 | 245 | 34.9545     | 1.20738 | 473 | 37.021      | 1.22937 |
| 18 | 40.4512     | 1.26409 | 246 | 63.8388     | 1.45898 | 474 | 69.5134     | 1.49855 |
| 19 | 73.8245     | 1.52716 | 247 | 37.9117     | 1.23859 | 475 | 56.8394     | 1.40669 |
| 20 | 42.037      | 1.27945 | 248 | 40.0303     | 1.25994 | 476 | 50.0603     | 1.35166 |
| 21 | 61.5524     | 1.44235 | 249 | 56.1166     | 1.40105 | 477 | 32.2014     | 1.17665 |
| 22 | 45.879      | 1.31511 | 250 | 39.0323     | 1.24998 | 478 | 52.6798     | 1.37349 |
| 23 | 42.5192     | 1.28405 | 251 | 31.863      | 1.17275 | 479 | 103.174     | 1.69656 |
| 24 | 54.6453     | 1.3894  | 252 | 77.3424     | 1.54967 | 480 | 35.0561     | 1.20848 |
| 25 | 45.7661     | 1.31409 | 253 | 56.3636     | 1.40298 | 481 | 65.171      | 1.46848 |
| 26 | 65.3743     | 1.46992 | 254 | 32.4694     | 1.17972 | 482 | 129.493     | 1.82213 |
| 27 | 49.4828     | 1.34674 | 255 | 53.4988     | 1.38017 | 483 | 94.4311     | 1.65    |
| 28 | 83.0131     | 1.58451 | 256 | 79.1785     | 1.56114 | 484 | 113.487     | 1.74813 |
| 29 | 97.1006     | 1.66452 | 257 | 96.2351     | 1.65985 | 485 | 43.1231     | 1.28975 |
| 30 | 79.8091     | 1.56503 | 258 | 31.5082     | 1.16863 | 486 | 34.0832     | 1.19784 |
| 31 | 56.0791     | 1.40075 | 259 | 58.5187     | 1.41962 | 487 | 42.6793     | 1.28557 |
| 32 | 42.6269     | 1.28507 | 260 | 159.551     | 1.94568 | 488 | 39.9603     | 1.25924 |
| 33 | 83.1866     | 1.58555 | 261 | 74.2781     | 1.5301  | 489 | 38.0202     | 1.2397  |
| 34 | 90.6738     | 1.62908 | 262 | 92.7546     | 1.64074 | 490 | 31.4736     | 1.16822 |
| 35 | 46.6736     | 1.32222 | 263 | 34.3891     | 1.20121 | 491 | 41.5477     | 1.27476 |

|    |         |         |     |         |         |     |         |         |
|----|---------|---------|-----|---------|---------|-----|---------|---------|
| 36 | 45.2547 | 1.30946 | 264 | 40.3468 | 1.26306 | 492 | 37.3913 | 1.23322 |
| 37 | 43.0087 | 1.28868 | 265 | 53.2392 | 1.37806 | 493 | 34.0013 | 1.19693 |
| 38 | 51.5097 | 1.36383 | 266 | 62.6994 | 1.45075 | 494 | 34.0769 | 1.19777 |
| 39 | 65.8253 | 1.4731  | 267 | 46.1727 | 1.31775 | 495 | 76.0161 | 1.54127 |
| 40 | 73.2382 | 1.52334 | 268 | 50.38   | 1.35436 | 496 | 35.6939 | 1.21535 |
| 41 | 36.8986 | 1.22809 | 269 | 57.1209 | 1.40888 | 497 | 32.3932 | 1.17885 |
| 42 | 35.6998 | 1.21541 | 270 | 40.5734 | 1.26529 | 498 | 39.5228 | 1.2549  |
| 43 | 37.862  | 1.23808 | 271 | 66.4386 | 1.4774  | 499 | 46.91   | 1.32433 |
| 44 | 68.1606 | 1.48933 | 272 | 33.8078 | 1.19479 | 500 | 36.7757 | 1.2268  |
| 45 | 113.272 | 1.74709 | 273 | 52.2449 | 1.36992 | 501 | 49.1037 | 1.34348 |
| 46 | 43.4411 | 1.29273 | 274 | 43.4572 | 1.29289 | 502 | 35.3044 | 1.21116 |
| 47 | 101.509 | 1.68791 | 275 | 77.5903 | 1.55123 | 503 | 36.0822 | 1.21949 |
| 48 | 114.101 | 1.75109 | 276 | 132.041 | 1.83333 | 504 | 40.2666 | 1.26227 |
| 49 | 75.5262 | 1.53814 | 277 | 97.2202 | 1.66517 | 505 | 36.4827 | 1.22372 |
| 50 | 166.254 | 1.971   | 278 | 78.9646 | 1.55981 | 506 | 32.3018 | 1.1778  |
| 51 | 51.3204 | 1.36226 | 279 | 63.0596 | 1.45336 | 507 | 49.7404 | 1.34894 |
| 52 | 133.976 | 1.84173 | 280 | 61.2471 | 1.4401  | 508 | 49.5907 | 1.34766 |
| 53 | 58.5342 | 1.41974 | 281 | 83.5659 | 1.58782 | 509 | 59.2419 | 1.42512 |
| 54 | 62.058  | 1.44607 | 282 | 57.99   | 1.41558 | 510 | 32.6034 | 1.18124 |
| 55 | 43.6088 | 1.2943  | 283 | 34.7381 | 1.20502 | 511 | 51.32   | 1.36225 |
| 56 | 55.4311 | 1.39565 | 284 | 124     | 1.79748 | 512 | 34.4565 | 1.20194 |
| 57 | 84.5384 | 1.59361 | 285 | 80.7722 | 1.57094 | 513 | 51.9159 | 1.3672  |
| 58 | 44.3989 | 1.30163 | 286 | 65.8182 | 1.47305 | 514 | 33.0928 | 1.18679 |
| 59 | 44.154  | 1.29936 | 287 | 75.8067 | 1.53993 | 515 | 48.2332 | 1.33595 |
| 60 | 88.9993 | 1.61957 | 288 | 61.4617 | 1.44169 | 516 | 31.2774 | 1.16593 |
| 61 | 37.2317 | 1.23156 | 289 | 37.692  | 1.23633 | 517 | 86.9023 | 1.60748 |
| 62 | 37.3657 | 1.23296 | 290 | 105.242 | 1.70718 | 518 | 35.5049 | 1.21332 |
| 63 | 59.9404 | 1.43038 | 291 | 93.6769 | 1.64585 | 519 | 40.155  | 1.26117 |
| 64 | 41.8838 | 1.27799 | 292 | 101.969 | 1.69031 | 520 | 49.5668 | 1.34745 |
| 65 | 45.5186 | 1.31185 | 293 | 99.9048 | 1.67948 | 521 | 41.5668 | 1.27494 |
| 66 | 35.3658 | 1.21182 | 294 | 40.3603 | 1.26319 | 522 | 34.382  | 1.20113 |
| 67 | 172.807 | 1.99509 | 295 | 60.2417 | 1.43263 | 523 | 43.7557 | 1.29567 |
| 68 | 62.9179 | 1.45233 | 296 | 57.5766 | 1.4124  | 524 | 56.169  | 1.40146 |
| 69 | 52.7827 | 1.37434 | 297 | 83.8643 | 1.5896  | 525 | 81.8902 | 1.57775 |
| 70 | 54.6501 | 1.38944 | 298 | 153.396 | 1.92177 | 526 | 49.6836 | 1.34845 |
| 71 | 120.895 | 1.78322 | 299 | 47.7618 | 1.33184 | 527 | 52.8783 | 1.37512 |
| 72 | 109.26  | 1.7274  | 300 | 36.7727 | 1.22677 | 528 | 61.125  | 1.4392  |
| 73 | 45.524  | 1.3119  | 301 | 60.4372 | 1.43409 | 529 | 40.803  | 1.26753 |
| 74 | 44.7796 | 1.30512 | 302 | 33.4137 | 1.19039 | 530 | 40.0899 | 1.26053 |
| 75 | 79.1792 | 1.56114 | 303 | 45.6694 | 1.31322 | 531 | 51.4696 | 1.3635  |
| 76 | 48.834  | 1.34116 | 304 | 47.9468 | 1.33346 | 532 | 70.7479 | 1.50687 |
| 77 | 57.9194 | 1.41504 | 305 | 37.4824 | 1.23416 | 533 | 61.8227 | 1.44434 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 78  | 126.221 | 1.80754 | 306 | 54.6259 | 1.38924 | 534 | 60.3974 | 1.43379 |
| 79  | 148.715 | 1.90314 | 307 | 62.711  | 1.45083 | 535 | 47.8838 | 1.3329  |
| 80  | 63.7684 | 1.45848 | 308 | 54.7331 | 1.3901  | 536 | 65.5074 | 1.47086 |
| 81  | 95.8387 | 1.65769 | 309 | 61.9038 | 1.44494 | 537 | 66.4709 | 1.47763 |
| 82  | 57.6809 | 1.41321 | 310 | 34.8334 | 1.20606 | 538 | 44.2784 | 1.30051 |
| 83  | 67.8725 | 1.48735 | 311 | 33.9631 | 1.19651 | 539 | 76.9497 | 1.54719 |
| 84  | 70.3649 | 1.5043  | 312 | 95.5415 | 1.65608 | 540 | 54.7884 | 1.39054 |
| 85  | 80.4203 | 1.56879 | 313 | 84.4995 | 1.59338 | 541 | 65.116  | 1.46809 |
| 86  | 50.5221 | 1.35556 | 314 | 55.1149 | 1.39314 | 542 | 36.6619 | 1.22561 |
| 87  | 49.5977 | 1.34772 | 315 | 50.7384 | 1.35738 | 543 | 63.2903 | 1.45503 |
| 88  | 45.1068 | 1.30811 | 316 | 88.2351 | 1.61519 | 544 | 49.4696 | 1.34662 |
| 89  | 52.647  | 1.37323 | 317 | 39.8865 | 1.25851 | 545 | 95.1607 | 1.654   |
| 90  | 112.371 | 1.74271 | 318 | 34.7658 | 1.20533 | 546 | 32.4168 | 1.17912 |
| 91  | 45.1786 | 1.30877 | 319 | 38.4446 | 1.24403 | 547 | 50.3876 | 1.35443 |
| 92  | 50.2412 | 1.35319 | 320 | 33.9876 | 1.19678 | 548 | 53.8393 | 1.38293 |
| 93  | 61.839  | 1.44446 | 321 | 54.0985 | 1.38501 | 549 | 79.2657 | 1.56168 |
| 94  | 85.9836 | 1.60212 | 322 | 36.6086 | 1.22505 | 550 | 70.0216 | 1.50199 |
| 95  | 50.4577 | 1.35502 | 323 | 37.3844 | 1.23315 | 551 | 110.733 | 1.73468 |
| 96  | 138.593 | 1.86145 | 324 | 42.2173 | 1.28118 | 552 | 101.746 | 1.68915 |
| 97  | 113.574 | 1.74855 | 325 | 33.6529 | 1.19306 | 553 | 97.7594 | 1.66806 |
| 98  | 45.7664 | 1.31409 | 326 | 68.3527 | 1.49065 | 554 | 100.108 | 1.68055 |
| 99  | 57.6779 | 1.41318 | 327 | 36.4723 | 1.22361 | 555 | 127.99  | 1.81546 |
| 100 | 57.7704 | 1.41389 | 328 | 43.0018 | 1.28861 | 556 | 35.5133 | 1.21341 |
| 101 | 91.3292 | 1.63278 | 329 | 54.8097 | 1.39071 | 557 | 34.2674 | 1.19987 |
| 102 | 55.4047 | 1.39544 | 330 | 38.2528 | 1.24208 | 558 | 37.1791 | 1.23102 |
| 103 | 50.3511 | 1.35412 | 331 | 55.6062 | 1.39703 | 559 | 35.555  | 1.21386 |
| 104 | 68.0192 | 1.48836 | 332 | 32.6906 | 1.18224 | 560 | 34.025  | 1.19719 |
| 105 | 144.637 | 1.88659 | 333 | 49.1164 | 1.34359 | 561 | 46.7885 | 1.32325 |
| 106 | 43.1419 | 1.28993 | 334 | 54.1862 | 1.38572 | 562 | 37.5582 | 1.23495 |
| 107 | 43.5408 | 1.29367 | 335 | 41.8051 | 1.27723 | 563 | 41.7254 | 1.27647 |
| 108 | 39.4989 | 1.25466 | 336 | 67.6501 | 1.48581 | 564 | 50.639  | 1.35655 |
| 109 | 32.53   | 1.18041 | 337 | 59.9848 | 1.43071 | 565 | 61.6933 | 1.44339 |
| 110 | 92.0639 | 1.63689 | 338 | 44.7375 | 1.30474 | 566 | 34.7421 | 1.20507 |
| 111 | 62.8718 | 1.452   | 339 | 32.1795 | 1.1764  | 567 | 37.9505 | 1.23899 |
| 112 | 55.7621 | 1.39826 | 340 | 33.7493 | 1.19414 | 568 | 76.1427 | 1.54207 |
| 113 | 35.5136 | 1.21341 | 341 | 42.4829 | 1.2837  | 569 | 99.08   | 1.67511 |
| 114 | 42.43   | 1.2832  | 342 | 34.0771 | 1.19777 | 570 | 57.3992 | 1.41103 |
| 115 | 40.8889 | 1.26837 | 343 | 33.942  | 1.19628 | 571 | 64.3317 | 1.46251 |
| 116 | 233.123 | 2.19192 | 344 | 31.7382 | 1.1713  | 572 | 33.8965 | 1.19577 |
| 117 | 47.4904 | 1.32945 | 345 | 43.8749 | 1.29678 | 573 | 63.6792 | 1.45783 |
| 118 | 49.3962 | 1.34599 | 346 | 32.5858 | 1.18104 | 574 | 99.7435 | 1.67863 |
| 119 | 52.3409 | 1.37071 | 347 | 61.4068 | 1.44128 | 575 | 76.4061 | 1.54375 |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 120 | 31.3494 | 1.16677 | 348 | 83.9467 | 1.59009 | 576 | 65.3613 | 1.46983 |
| 121 | 52.4359 | 1.37149 | 349 | 43.9191 | 1.29719 | 577 | 75.259  | 1.53643 |
| 122 | 52.0526 | 1.36833 | 350 | 40.7078 | 1.2666  | 578 | 76.2295 | 1.54263 |
| 123 | 54.1463 | 1.3854  | 351 | 50.213  | 1.35295 | 579 | 110.585 | 1.73396 |
| 124 | 36.8309 | 1.22738 | 352 | 123.446 | 1.79495 | 580 | 69.3186 | 1.49723 |
| 125 | 44.1412 | 1.29925 | 353 | 62.0649 | 1.44612 | 581 | 121.734 | 1.78709 |
| 126 | 49.7822 | 1.34929 | 354 | 86.2382 | 1.60361 | 582 | 120.497 | 1.78137 |
| 127 | 41.8354 | 1.27752 | 355 | 41.1476 | 1.27089 | 583 | 76.3513 | 1.5434  |
| 128 | 122.728 | 1.79167 | 356 | 82.8648 | 1.58362 | 584 | 87.8895 | 1.61319 |
| 129 | 39.5822 | 1.25549 | 357 | 54.9    | 1.39143 | 585 | 68.6536 | 1.4927  |
| 130 | 38.3536 | 1.24311 | 358 | 60.5206 | 1.43471 | 586 | 47.6172 | 1.33057 |
| 131 | 77.3281 | 1.54958 | 359 | 139.116 | 1.86365 | 587 | 95.31   | 1.65481 |
| 132 | 34.3879 | 1.20119 | 360 | 58.2932 | 1.4179  | 588 | 88.5603 | 1.61705 |
| 133 | 41.4006 | 1.27334 | 361 | 57.4747 | 1.41162 | 589 | 80.6927 | 1.57046 |
| 134 | 33.5961 | 1.19243 | 362 | 51.5603 | 1.36425 | 590 | 46.346  | 1.3193  |
| 135 | 40.029  | 1.25993 | 363 | 70.8275 | 1.5074  | 591 | 82.7345 | 1.58284 |
| 136 | 33.0627 | 1.18645 | 364 | 58.2621 | 1.41767 | 592 | 97.5613 | 1.667   |
| 137 | 39.9207 | 1.25885 | 365 | 40.7081 | 1.2666  | 593 | 96.0502 | 1.65884 |
| 138 | 130.307 | 1.82573 | 366 | 37.891  | 1.23838 | 594 | 81.5628 | 1.57576 |
| 139 | 79.2536 | 1.5616  | 367 | 44.9729 | 1.30689 | 595 | 45.1248 | 1.30828 |
| 140 | 31.861  | 1.17272 | 368 | 38.8199 | 1.24784 | 596 | 140.962 | 1.87139 |
| 141 | 36.9008 | 1.22811 | 369 | 31.5309 | 1.16889 | 597 | 54.0311 | 1.38447 |
| 142 | 54.0732 | 1.38481 | 370 | 35.129  | 1.20927 | 598 | 70.4729 | 1.50503 |
| 143 | 76.9396 | 1.54713 | 371 | 51.6864 | 1.3653  | 599 | 50.8689 | 1.35848 |
| 144 | 57.4893 | 1.41173 | 372 | 64.5979 | 1.46441 | 600 | 35.8312 | 1.21681 |
| 145 | 83.773  | 1.58906 | 373 | 33.2105 | 1.18811 | 601 | 44.8901 | 1.30613 |
| 146 | 46.7164 | 1.32261 | 374 | 74.2668 | 1.53003 | 602 | 36.6631 | 1.22562 |
| 147 | 42.0213 | 1.27931 | 375 | 35.4311 | 1.21253 | 603 | 45.0605 | 1.30769 |
| 148 | 59.844  | 1.42965 | 376 | 95.0563 | 1.65343 | 604 | 35.342  | 1.21157 |
| 149 | 89.1835 | 1.62062 | 377 | 88.8369 | 1.61864 | 605 | 34.4511 | 1.20189 |
| 150 | 285.165 | 2.33522 | 378 | 49.25   | 1.34474 | 606 | 46.1938 | 1.31794 |
| 151 | 36.0763 | 1.21942 | 379 | 64.625  | 1.4646  | 607 | 69.2026 | 1.49645 |
| 152 | 63.2074 | 1.45443 | 380 | 42.0193 | 1.27929 | 608 | 69.3066 | 1.49715 |
| 153 | 95.9698 | 1.65841 | 381 | 57.3361 | 1.41055 | 609 | 85.0669 | 1.59673 |
| 154 | 62.3705 | 1.44835 | 382 | 34.7903 | 1.20559 | 610 | 56.9253 | 1.40736 |
| 155 | 76.7306 | 1.54581 | 383 | 51.5358 | 1.36405 | 611 | 175.172 | 2.00364 |
| 156 | 108.054 | 1.72138 | 384 | 46.0611 | 1.31675 | 612 | 81.8689 | 1.57762 |
| 157 | 61.0865 | 1.43891 | 385 | 45.4186 | 1.31095 | 613 | 32.168  | 1.17626 |
| 158 | 50.2166 | 1.35298 | 386 | 39.0727 | 1.25039 | 614 | 142.556 | 1.87801 |
| 159 | 39.5749 | 1.25542 | 387 | 45.6322 | 1.31288 | 615 | 35.0078 | 1.20796 |
| 160 | 43.7662 | 1.29577 | 388 | 35.3346 | 1.21149 | 616 | 39.6227 | 1.25589 |
| 161 | 64.7777 | 1.46569 | 389 | 36.0801 | 1.21946 | 617 | 47.2845 | 1.32764 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 162 | 43.4258 | 1.29259 | 390 | 55.9622 | 1.39984 | 618 | 171.546 | 1.99051 |
| 163 | 53.8261 | 1.38282 | 391 | 68.8658 | 1.49415 | 619 | 108.252 | 1.72237 |
| 164 | 35.0361 | 1.20826 | 392 | 66.2599 | 1.47615 | 620 | 80.9347 | 1.57194 |
| 165 | 143.973 | 1.88386 | 393 | 57.4454 | 1.41139 | 621 | 71.8029 | 1.51389 |
| 166 | 89.3523 | 1.62158 | 394 | 71.6596 | 1.51294 | 622 | 55.6762 | 1.39758 |
| 167 | 53.7943 | 1.38256 | 395 | 92.761  | 1.64078 | 623 | 88.0236 | 1.61397 |
| 168 | 37.5287 | 1.23464 | 396 | 46.4646 | 1.32036 | 624 | 52.9936 | 1.37606 |
| 169 | 97.2443 | 1.6653  | 397 | 60.1475 | 1.43193 | 625 | 35.3733 | 1.21191 |
| 170 | 56.4171 | 1.4034  | 398 | 58.5887 | 1.42016 | 626 | 72.2643 | 1.51694 |
| 171 | 54.126  | 1.38524 | 399 | 42.2996 | 1.28196 | 627 | 143.82  | 1.88323 |
| 172 | 44.6987 | 1.30438 | 400 | 42.9405 | 1.28803 | 628 | 75.3209 | 1.53682 |
| 173 | 203.559 | 2.10047 | 401 | 52.9767 | 1.37592 | 629 | 88.3468 | 1.61583 |
| 174 | 124.133 | 1.79809 | 402 | 36.6384 | 1.22536 | 630 | 82.4737 | 1.58127 |
| 175 | 114.401 | 1.75254 | 403 | 33.6526 | 1.19306 | 631 | 76.3158 | 1.54317 |
| 176 | 90.6127 | 1.62874 | 404 | 69.3934 | 1.49774 | 632 | 74.5287 | 1.53173 |
| 177 | 178.917 | 2.017   | 405 | 61.0211 | 1.43843 | 633 | 57.0005 | 1.40795 |
| 178 | 181.948 | 2.02768 | 406 | 40.7575 | 1.26709 | 634 | 36.2639 | 1.22141 |
| 179 | 159.697 | 1.94623 | 407 | 164.444 | 1.96423 | 635 | 78.0875 | 1.55434 |
| 180 | 38.359  | 1.24316 | 408 | 92.2774 | 1.63808 | 636 | 54.5146 | 1.38835 |
| 181 | 220.914 | 2.15518 | 409 | 54.382  | 1.38729 | 637 | 117.662 | 1.76809 |
| 182 | 86.0004 | 1.60222 | 410 | 60.9025 | 1.43755 | 638 | 87.6544 | 1.61184 |
| 183 | 141.878 | 1.8752  | 411 | 80.5911 | 1.56984 | 639 | 36.023  | 1.21886 |
| 184 | 212.786 | 2.12994 | 412 | 94.6674 | 1.6513  | 640 | 93.3035 | 1.64379 |
| 185 | 123.027 | 1.79304 | 413 | 72.4428 | 1.51812 | 641 | 36.6672 | 1.22567 |
| 186 | 163.346 | 1.9601  | 414 | 55.3916 | 1.39533 | 642 | 64.7015 | 1.46515 |
| 187 | 135.043 | 1.84633 | 415 | 52.8371 | 1.37478 | 643 | 90.656  | 1.62898 |
| 188 | 208.06  | 2.11496 | 416 | 64.3134 | 1.46238 | 644 | 71.8846 | 1.51444 |
| 189 | 104.107 | 1.70137 | 417 | 56.4309 | 1.40351 | 645 | 83.7671 | 1.58902 |
| 190 | 102.327 | 1.69217 | 418 | 59.7376 | 1.42885 | 646 | 48.5336 | 1.33856 |
| 191 | 199.824 | 2.08828 | 419 | 60.5544 | 1.43496 | 647 | 95.3282 | 1.65491 |
| 192 | 237.141 | 2.20373 | 420 | 44.4624 | 1.30221 | 648 | 66.0014 | 1.47434 |
| 193 | 171.009 | 1.98855 | 421 | 56.9957 | 1.40791 | 649 | 90.892  | 1.63031 |
| 194 | 99.2137 | 1.67582 | 422 | 69.874  | 1.50099 | 650 | 61.2983 | 1.44048 |
| 195 | 169.786 | 1.98407 | 423 | 66.6969 | 1.4792  | 651 | 85.8392 | 1.60127 |
| 196 | 90.0449 | 1.62552 | 424 | 67.146  | 1.48233 | 652 | 77.4697 | 1.55047 |
| 197 | 207.871 | 2.11435 | 425 | 54.5258 | 1.38844 | 653 | 48.992  | 1.34252 |
| 198 | 102.517 | 1.69316 | 426 | 62.9001 | 1.45221 | 654 | 78.565  | 1.55733 |
| 199 | 116.943 | 1.76468 | 427 | 86.4097 | 1.60461 | 655 | 48.69   | 1.33992 |
| 200 | 70.916  | 1.50799 | 428 | 97.8324 | 1.66846 | 656 | 78.7284 | 1.55834 |
| 201 | 134.105 | 1.84229 | 429 | 54.4381 | 1.38774 | 657 | 170.755 | 1.98762 |
| 202 | 53.9474 | 1.3838  | 430 | 132.852 | 1.83686 | 658 | 40.0728 | 1.26036 |
| 203 | 106.279 | 1.71245 | 431 | 124.622 | 1.80031 | 659 | 94.0416 | 1.64786 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 204 | 156.98  | 1.93577 | 432 | 97.5494 | 1.66694 | 660 | 114.141 | 1.75129 |
| 205 | 91.3331 | 1.6328  | 433 | 98.8642 | 1.67397 | 661 | 65.7735 | 1.47274 |
| 206 | 128.915 | 1.81958 | 434 | 62.6744 | 1.45057 | 662 | 100.586 | 1.68307 |
| 207 | 149.458 | 1.90612 | 435 | 246.764 | 2.23145 | 663 | 63.725  | 1.45816 |
| 208 | 97.365  | 1.66595 | 436 | 164.115 | 1.963   | 664 | 67.1218 | 1.48216 |
| 209 | 107.972 | 1.72097 | 437 | 117.259 | 1.76619 | 665 | 63.3773 | 1.45566 |
| 210 | 158.122 | 1.94018 | 438 | 113.578 | 1.74857 | 666 | 44.7922 | 1.30524 |
| 211 | 115.875 | 1.75961 | 439 | 134.959 | 1.84597 | 667 | 57.3242 | 1.41045 |
| 212 | 54.7008 | 1.38984 | 440 | 245.571 | 2.22805 | 668 | 97.8044 | 1.6683  |
| 213 | 130.088 | 1.82476 | 441 | 55.6291 | 1.39721 | 669 | 112.261 | 1.74217 |
| 214 | 117.693 | 1.76824 | 442 | 135.753 | 1.84937 | 670 | 37.4752 | 1.23409 |
| 215 | 89.2299 | 1.62089 | 443 | 60.1794 | 1.43217 | 671 | 32.6236 | 1.18147 |
| 216 | 76.6818 | 1.5455  | 444 | 33.4937 | 1.19129 | 672 | 59.8287 | 1.42954 |
| 217 | 107.417 | 1.71819 | 445 | 37.6942 | 1.23635 | 673 | 41.9194 | 1.27833 |
| 218 | 177.767 | 2.01291 | 446 | 33.0906 | 1.18676 | 674 | 82.7528 | 1.58295 |
| 219 | 93.8312 | 1.6467  | 447 | 41.0607 | 1.27004 | 675 | 178.997 | 2.01728 |
| 220 | 88.9692 | 1.6194  | 448 | 45.7902 | 1.31431 | 676 | 94.9529 | 1.65286 |
| 221 | 128.933 | 1.81966 | 449 | 66.2867 | 1.47634 | 677 | 56.6843 | 1.40549 |
| 222 | 134.494 | 1.84397 | 450 | 74.2139 | 1.52969 | 678 | 179.781 | 2.02006 |
| 223 | 136.315 | 1.85177 | 451 | 87.384  | 1.61027 | 679 | 101.473 | 1.68772 |
| 224 | 126.601 | 1.80925 | 452 | 56.304  | 1.40252 | 680 | 53.2842 | 1.37843 |
| 225 | 34.0695 | 1.19769 | 453 | 43.1058 | 1.28959 | 681 | 37.4497 | 1.23383 |
| 226 | 172.801 | 1.99507 | 454 | 77.5423 | 1.55093 | 682 | 56.6777 | 1.40544 |
| 227 | 35.0518 | 1.20843 | 455 | 90.8155 | 1.62988 | 683 | 32.3261 | 1.17808 |
| 228 | 65.4887 | 1.47073 | 456 | 57.2411 | 1.40981 | 684 | 46.8028 | 1.32337 |

## SEPTEMBER 2019 Analysis Information

|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| Species                      | T. Thynnus fattened (Tzoumas 2009)                                     |
| Site                         |                                                                        |
| Cage                         |                                                                        |
| Recording date               | 02.09.2019 11:11                                                       |
| Comments                     |                                                                        |
| Project folder               | C:\Documents and Settings\Administrator\Desktop\02.09.2019 iccat proje |
| Datafile folder              | C:\Documents and Settings\Administrator\Desktop\02.09.2019             |
| Calibration filename left    | 20120424_151827_00111CF020A8_Left.Cam                                  |
| Calibration filename right   | 20120424_151827_00111CF020A3_Right.Cam                                 |
| Program version              | 1.1.1.12713                                                            |
| Computer name                | AM100TOUGHBOOK                                                         |
|                              |                                                                        |
| Mean weight (kg)             | 86,0119                                                                |
| Minimum weight (kg)          | 41,7305                                                                |
| Maximum weight (kg)          | 312,487                                                                |
| Weight S.D. (kg)             | 42,6509                                                                |
| Weight CV (%)                | 49,5872                                                                |
| Sample size (weight)         | 684                                                                    |
| Samples out of formula range | 0                                                                      |
| Mean FL (m)                  | 1,5676                                                                 |
| Minimum FL (m)               | 1,27652                                                                |
| Maximum FL (m)               | 2,40334                                                                |
| FL S.D. (m)                  | 0,220432                                                               |
| FL CV (%)                    | 14,0617                                                                |
| Sample size (FL)             | 684                                                                    |
| Positive Count               | 0                                                                      |
| Negative Count               | 0                                                                      |
| Total Count                  | 0                                                                      |

In **Table 9** raw data of the study performed in 2 September 2019 are given.

**Table 9. Lengths and weights of BFT (SEPTEMBER 2019 Analysis)(Raw data)**

| ID | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  |
|----|-------------|---------|-----|-------------|---------|-----|-------------|---------|
|    |             |         |     |             |         |     |             |         |
| 1  | 49,9883     | 1,35104 | 229 | 98,6204     | 1,67267 | 457 | 112,82      | 1,74489 |
| 2  | 44,07       | 1,29859 | 230 | 46,2621     | 1,31855 | 458 | 62,6268     | 1,45022 |
| 3  | 45,6539     | 1,31308 | 231 | 77,6822     | 1,5518  | 459 | 63,2288     | 1,45459 |
| 4  | 55,7704     | 1,39833 | 232 | 48,3952     | 1,33736 | 460 | 62,2762     | 1,44766 |
| 5  | 49,1646     | 1,34401 | 233 | 51,7775     | 1,36606 | 461 | 63,9464     | 1,45975 |
| 6  | 42,2233     | 1,28123 | 234 | 46,4931     | 1,32062 | 462 | 60,8473     | 1,43714 |
| 7  | 68,6036     | 1,49236 | 235 | 61,5101     | 1,44204 | 463 | 135,912     | 1,85005 |
| 8  | 69,8863     | 1,50108 | 236 | 48,0073     | 1,33398 | 464 | 107,806     | 1,72014 |
| 9  | 58,2313     | 1,41743 | 237 | 44,8849     | 1,30609 | 465 | 82,0352     | 1,57862 |
| 10 | 76,7971     | 1,54623 | 238 | 52,0262     | 1,36812 | 466 | 81,1784     | 1,57342 |
| 11 | 42,244      | 1,28143 | 239 | 66,9291     | 1,48082 | 467 | 73,1643     | 1,52286 |
| 12 | 64,3431     | 1,46259 | 240 | 47,427      | 1,3289  | 468 | 65,8949     | 1,47359 |
| 13 | 74,3494     | 1,53057 | 241 | 53,8915     | 1,38335 | 469 | 62,1003     | 1,44638 |
| 14 | 89,1635     | 1,62051 | 242 | 48,0995     | 1,33479 | 470 | 63,9784     | 1,45998 |
| 15 | 43,5542     | 1,29379 | 243 | 44,125      | 1,2991  | 471 | 51,1634     | 1,36095 |
| 16 | 115,431     | 1,75748 | 244 | 67,8876     | 1,48745 | 472 | 62,614      | 1,45013 |
| 17 | 61,4895     | 1,44189 | 245 | 75,6719     | 1,53907 | 473 | 51,1715     | 1,36101 |
| 18 | 80,3349     | 1,56827 | 246 | 48,6602     | 1,33966 | 474 | 102,432     | 1,69272 |
| 19 | 64,2589     | 1,46199 | 247 | 45,4181     | 1,31094 | 475 | 49,3708     | 1,34578 |
| 20 | 49,1544     | 1,34392 | 248 | 44,4019     | 1,30165 | 476 | 56,2228     | 1,40188 |
| 21 | 61,5903     | 1,44263 | 249 | 49,1094     | 1,34353 | 477 | 77,7765     | 1,5524  |
| 22 | 131,775     | 1,83217 | 250 | 68,6636     | 1,49277 | 478 | 128,712     | 1,81868 |
| 23 | 45,7704     | 1,31413 | 251 | 45,7295     | 1,31376 | 479 | 110,354     | 1,73282 |
| 24 | 47,1364     | 1,32633 | 252 | 50,7396     | 1,35739 | 480 | 52,5631     | 1,37254 |
| 25 | 49,0886     | 1,34335 | 253 | 63,7896     | 1,45863 | 481 | 84,9788     | 1,59621 |
| 26 | 61,9702     | 1,44542 | 254 | 47,4402     | 1,32901 | 482 | 54,7904     | 1,39056 |
| 27 | 70,9585     | 1,50828 | 255 | 47,4561     | 1,32915 | 483 | 59,8986     | 1,43006 |
| 28 | 48,6462     | 1,33954 | 256 | 52,7416     | 1,374   | 484 | 61,644      | 1,44303 |
| 29 | 81,3781     | 1,57464 | 257 | 47,2932     | 1,32772 | 485 | 70,4613     | 1,50495 |
| 30 | 68,7092     | 1,49308 | 258 | 46,1152     | 1,31723 | 486 | 75,7506     | 1,53957 |
| 31 | 69,831      | 1,5007  | 259 | 44,3904     | 1,30155 | 487 | 88,5436     | 1,61696 |
| 32 | 47,0898     | 1,32592 | 260 | 48,2397     | 1,33601 | 488 | 63,9338     | 1,45966 |
| 33 | 44,4464     | 1,30206 | 261 | 165,33      | 1,96755 | 489 | 71,9102     | 1,5146  |
| 34 | 46,2671     | 1,31859 | 262 | 44,3296     | 1,30099 | 490 | 62,1861     | 1,447   |

|    |         |         |     |         |         |     |         |         |
|----|---------|---------|-----|---------|---------|-----|---------|---------|
| 35 | 99,0408 | 1,6749  | 263 | 41,9241 | 1,27837 | 491 | 70,221  | 1,50333 |
| 36 | 49,8097 | 1,34953 | 264 | 45,5837 | 1,31244 | 492 | 106,027 | 1,71117 |
| 37 | 45,1414 | 1,30843 | 265 | 45,4663 | 1,31138 | 493 | 67,0453 | 1,48163 |
| 38 | 43,883  | 1,29685 | 266 | 94,3409 | 1,64951 | 494 | 76,4866 | 1,54426 |
| 39 | 45,9215 | 1,31549 | 267 | 50,2886 | 1,35359 | 495 | 72,4    | 1,51784 |
| 40 | 51,7336 | 1,36569 | 268 | 117,639 | 1,76798 | 496 | 61,0199 | 1,43842 |
| 41 | 44,2243 | 1,30001 | 269 | 64,3224 | 1,46245 | 497 | 100,748 | 1,68393 |
| 42 | 63,2897 | 1,45503 | 270 | 52,5357 | 1,37231 | 498 | 68,1975 | 1,48958 |
| 43 | 46,9391 | 1,32458 | 271 | 41,7305 | 1,27652 | 499 | 65,5043 | 1,47084 |
| 44 | 62,3426 | 1,44815 | 272 | 45,899  | 1,31529 | 500 | 80,8193 | 1,57123 |
| 45 | 87,1972 | 1,60919 | 273 | 50,3014 | 1,3537  | 501 | 122,326 | 1,78982 |
| 46 | 62,4346 | 1,44882 | 274 | 89,4779 | 1,6223  | 502 | 55,5978 | 1,39696 |
| 47 | 52,6601 | 1,37333 | 275 | 49,8454 | 1,34983 | 503 | 76,0011 | 1,54117 |
| 48 | 45,6405 | 1,31296 | 276 | 73,6307 | 1,5259  | 504 | 75,2859 | 1,5366  |
| 49 | 43,6878 | 1,29504 | 277 | 94,4612 | 1,65017 | 505 | 54,7312 | 1,39008 |
| 50 | 80,9555 | 1,57206 | 278 | 82,9766 | 1,58429 | 506 | 65,3641 | 1,46985 |
| 51 | 46,98   | 1,32495 | 279 | 71,4631 | 1,51164 | 507 | 99,1805 | 1,67565 |
| 52 | 72,794  | 1,52043 | 280 | 51,6258 | 1,3648  | 508 | 76,3188 | 1,54319 |
| 53 | 51,0138 | 1,35969 | 281 | 45,6577 | 1,31311 | 509 | 82,2    | 1,57962 |
| 54 | 59,4846 | 1,42695 | 282 | 87,8232 | 1,61281 | 510 | 108,086 | 1,72155 |
| 55 | 60,9484 | 1,43789 | 283 | 50,5656 | 1,35593 | 511 | 56,213  | 1,4018  |
| 56 | 48,4377 | 1,33773 | 284 | 50,4219 | 1,35472 | 512 | 73,6289 | 1,52589 |
| 57 | 73,0584 | 1,52216 | 285 | 82,2136 | 1,5797  | 513 | 67,4941 | 1,48474 |
| 58 | 86,5498 | 1,60543 | 286 | 46,4905 | 1,32059 | 514 | 59,4375 | 1,42659 |
| 59 | 47,0622 | 1,32567 | 287 | 111,744 | 1,73964 | 515 | 63,4186 | 1,45596 |
| 60 | 196,908 | 2,07866 | 288 | 51,979  | 1,36773 | 516 | 56,8165 | 1,40652 |
| 61 | 107,706 | 1,71964 | 289 | 45,5847 | 1,31245 | 517 | 105,446 | 1,70822 |
| 62 | 45,0267 | 1,30738 | 290 | 88,2309 | 1,61516 | 518 | 76,448  | 1,54401 |
| 63 | 109,968 | 1,73091 | 291 | 51,5623 | 1,36427 | 519 | 65,5656 | 1,47127 |
| 64 | 48,2209 | 1,33585 | 292 | 83,4913 | 1,58738 | 520 | 112,636 | 1,744   |
| 65 | 157,722 | 1,93864 | 293 | 69,6643 | 1,49958 | 521 | 65,5954 | 1,47148 |
| 66 | 78,5739 | 1,55738 | 294 | 50,8873 | 1,35863 | 522 | 60,0131 | 1,43092 |
| 67 | 94,4675 | 1,6502  | 295 | 60,7933 | 1,43674 | 523 | 125,413 | 1,8039  |
| 68 | 52,9438 | 1,37565 | 296 | 49,0118 | 1,34269 | 524 | 62,9651 | 1,45268 |
| 69 | 129,8   | 1,82349 | 297 | 57,6895 | 1,41327 | 525 | 86,9088 | 1,60752 |
| 70 | 146,579 | 1,89451 | 298 | 57,1647 | 1,40922 | 526 | 80,7754 | 1,57096 |
| 71 | 76,7441 | 1,54589 | 299 | 61,3627 | 1,44096 | 527 | 58,1492 | 1,4168  |
| 72 | 84,6797 | 1,59444 | 300 | 108,185 | 1,72204 | 528 | 60,8493 | 1,43716 |
| 73 | 73,4548 | 1,52475 | 301 | 107,493 | 1,71857 | 529 | 76,2385 | 1,54268 |
| 74 | 71,8001 | 1,51388 | 302 | 98,3842 | 1,67141 | 530 | 76,329  | 1,54326 |
| 75 | 136,251 | 1,8515  | 303 | 68,0983 | 1,4889  | 531 | 98,729  | 1,67325 |
| 76 | 56,1954 | 1,40167 | 304 | 68,9758 | 1,4949  | 532 | 69,4006 | 1,49779 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 77  | 60,858  | 1,43722 | 305 | 63,2986 | 1,45509 | 533 | 76,3605 | 1,54346 |
| 78  | 62,9801 | 1,45279 | 306 | 49,9675 | 1,35087 | 534 | 118,801 | 1,77345 |
| 79  | 60,5635 | 1,43503 | 307 | 52,5459 | 1,3724  | 535 | 86,7429 | 1,60655 |
| 80  | 116,687 | 1,76347 | 308 | 108,873 | 1,72547 | 536 | 85,0635 | 1,59671 |
| 81  | 78,0822 | 1,55431 | 309 | 69,0109 | 1,49514 | 537 | 69,5165 | 1,49858 |
| 82  | 71,0721 | 1,50903 | 310 | 107,051 | 1,71635 | 538 | 90,4257 | 1,62768 |
| 83  | 88,3437 | 1,61581 | 311 | 47,081  | 1,32584 | 539 | 94,9809 | 1,65302 |
| 84  | 110,624 | 1,73415 | 312 | 50,3847 | 1,3544  | 540 | 93,8869 | 1,64701 |
| 85  | 96,6805 | 1,66226 | 313 | 53,8799 | 1,38325 | 541 | 66,6879 | 1,47914 |
| 86  | 197,145 | 2,07944 | 314 | 62,757  | 1,45117 | 542 | 105,595 | 1,70898 |
| 87  | 94,7552 | 1,65178 | 315 | 79,6623 | 1,56413 | 543 | 73,8316 | 1,52721 |
| 88  | 64,04   | 1,46043 | 316 | 72,7768 | 1,52032 | 544 | 95,0781 | 1,65355 |
| 89  | 73,1481 | 1,52275 | 317 | 48,3286 | 1,33678 | 545 | 92,2701 | 1,63804 |
| 90  | 206,209 | 2,10903 | 318 | 109,706 | 1,72961 | 546 | 146,241 | 1,89314 |
| 91  | 161,864 | 1,9545  | 319 | 45,1198 | 1,30823 | 547 | 131,348 | 1,8303  |
| 92  | 124,462 | 1,79959 | 320 | 45,7078 | 1,31356 | 548 | 92,6808 | 1,64033 |
| 93  | 106,935 | 1,71576 | 321 | 46,0047 | 1,31624 | 549 | 161,824 | 1,95435 |
| 94  | 84,2059 | 1,59163 | 322 | 46,8635 | 1,32391 | 550 | 83,5807 | 1,58791 |
| 95  | 134,682 | 1,84477 | 323 | 58,5256 | 1,41968 | 551 | 115,247 | 1,7566  |
| 96  | 66,5298 | 1,47804 | 324 | 53,3698 | 1,37912 | 552 | 85,5424 | 1,59953 |
| 97  | 168,121 | 1,97793 | 325 | 97,4453 | 1,66638 | 553 | 116,821 | 1,76411 |
| 98  | 66,2707 | 1,47622 | 326 | 64,362  | 1,46273 | 554 | 120,33  | 1,78059 |
| 99  | 60,7082 | 1,43611 | 327 | 124,748 | 1,80088 | 555 | 114,888 | 1,75488 |
| 100 | 49,5111 | 1,34698 | 328 | 73,2229 | 1,52324 | 556 | 62,1892 | 1,44703 |
| 101 | 50,8768 | 1,35855 | 329 | 74,7166 | 1,53294 | 557 | 99,5689 | 1,67771 |
| 102 | 104,761 | 1,70472 | 330 | 67,1569 | 1,4824  | 558 | 98,9295 | 1,67431 |
| 103 | 42,886  | 1,28752 | 331 | 48,8958 | 1,34169 | 559 | 175,755 | 2,00573 |
| 104 | 44,6007 | 1,30348 | 332 | 103,055 | 1,69595 | 560 | 77,8467 | 1,55284 |
| 105 | 67,7213 | 1,4863  | 333 | 78,5603 | 1,5573  | 561 | 163,132 | 1,9593  |
| 106 | 144,581 | 1,88636 | 334 | 78,5889 | 1,55747 | 562 | 191,682 | 2,06116 |
| 107 | 209,779 | 2,12044 | 335 | 62,4284 | 1,44877 | 563 | 182,615 | 2,03001 |
| 108 | 53,8664 | 1,38314 | 336 | 68,0188 | 1,48835 | 564 | 195,083 | 2,07258 |
| 109 | 45,7863 | 1,31427 | 337 | 83,1538 | 1,58536 | 565 | 176,4   | 2,00804 |
| 110 | 107,3   | 1,7176  | 338 | 84,4495 | 1,59308 | 566 | 182,909 | 2,03104 |
| 111 | 47,0317 | 1,3254  | 339 | 50,0862 | 1,35187 | 567 | 243,878 | 2,22322 |
| 112 | 56,8756 | 1,40698 | 340 | 58,5327 | 1,41973 | 568 | 193,697 | 2,06795 |
| 113 | 46,4938 | 1,32062 | 341 | 76,8293 | 1,54643 | 569 | 164,306 | 1,96372 |
| 114 | 47,0378 | 1,32546 | 342 | 80,5504 | 1,56959 | 570 | 167,277 | 1,9748  |
| 115 | 44,7853 | 1,30517 | 343 | 52,9669 | 1,37584 | 571 | 230,501 | 2,18415 |
| 116 | 44,6579 | 1,30401 | 344 | 52,5644 | 1,37255 | 572 | 201,923 | 2,09515 |
| 117 | 43,886  | 1,29688 | 345 | 63,3466 | 1,45544 | 573 | 246,473 | 2,23062 |
| 118 | 185,185 | 2,03894 | 346 | 70,4073 | 1,50458 | 574 | 110,824 | 1,73513 |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 119 | 187,981 | 2,04857 | 347 | 51,2172 | 1,36139 | 575 | 139,775 | 1,86642 |
| 120 | 164,6   | 1,96482 | 348 | 86,0657 | 1,6026  | 576 | 202,722 | 2,09775 |
| 121 | 60,6627 | 1,43577 | 349 | 43,7352 | 1,29548 | 577 | 98,2457 | 1,67067 |
| 122 | 53,462  | 1,37987 | 350 | 52,4752 | 1,37182 | 578 | 89,2925 | 1,62124 |
| 123 | 44,5657 | 1,30316 | 351 | 51,6319 | 1,36485 | 579 | 68,6087 | 1,4924  |
| 124 | 45,9548 | 1,31579 | 352 | 69,9987 | 1,50184 | 580 | 126,775 | 1,81003 |
| 125 | 63,3552 | 1,4555  | 353 | 53,4701 | 1,37994 | 581 | 67,3017 | 1,4834  |
| 126 | 43,5308 | 1,29357 | 354 | 62,0358 | 1,4459  | 582 | 142,693 | 1,87858 |
| 127 | 46,0726 | 1,31685 | 355 | 68,082  | 1,48879 | 583 | 93,0497 | 1,64238 |
| 128 | 105,599 | 1,70899 | 356 | 64,8795 | 1,46642 | 584 | 191,728 | 2,06131 |
| 129 | 44,0433 | 1,29834 | 357 | 70,1308 | 1,50273 | 585 | 67,722  | 1,48631 |
| 130 | 62,2434 | 1,44742 | 358 | 53,3674 | 1,3791  | 586 | 130,281 | 1,82561 |
| 131 | 48,4427 | 1,33777 | 359 | 50,1902 | 1,35276 | 587 | 99,5071 | 1,67738 |
| 132 | 45,6446 | 1,31299 | 360 | 76,1024 | 1,54182 | 588 | 50,6304 | 1,35647 |
| 133 | 76,1565 | 1,54216 | 361 | 61,3457 | 1,44083 | 589 | 45,7519 | 1,31396 |
| 134 | 72,1992 | 1,51652 | 362 | 61,874  | 1,44472 | 590 | 268,208 | 2,29066 |
| 135 | 46,5149 | 1,32081 | 363 | 50,6645 | 1,35676 | 591 | 140,469 | 1,86933 |
| 136 | 44,8636 | 1,30589 | 364 | 85,3758 | 1,59855 | 592 | 180,339 | 2,02202 |
| 137 | 44,6758 | 1,30417 | 365 | 73,1744 | 1,52292 | 593 | 190,731 | 2,05794 |
| 138 | 54,6684 | 1,38958 | 366 | 78,5959 | 1,55752 | 594 | 182,644 | 2,03011 |
| 139 | 96,2971 | 1,66018 | 367 | 43,5155 | 1,29343 | 595 | 186,791 | 2,04448 |
| 140 | 44,2388 | 1,30015 | 368 | 81,3111 | 1,57423 | 596 | 260,933 | 2,27095 |
| 141 | 105,955 | 1,7108  | 369 | 109,116 | 1,72668 | 597 | 167,4   | 1,97526 |
| 142 | 102,867 | 1,69497 | 370 | 106,636 | 1,71425 | 598 | 214,183 | 2,13432 |
| 143 | 63,8824 | 1,4593  | 371 | 68,8756 | 1,49422 | 599 | 183,313 | 2,03244 |
| 144 | 51,8162 | 1,36638 | 372 | 57,7442 | 1,41369 | 600 | 164,429 | 1,96418 |
| 145 | 82,7094 | 1,58269 | 373 | 70,5485 | 1,50553 | 601 | 185,471 | 2,03993 |
| 146 | 47,6386 | 1,33076 | 374 | 47,2561 | 1,32739 | 602 | 72,2495 | 1,51685 |
| 147 | 48,8675 | 1,34145 | 375 | 74,4455 | 1,53119 | 603 | 86,6471 | 1,60599 |
| 148 | 43,4978 | 1,29326 | 376 | 67,3882 | 1,484   | 604 | 108,965 | 1,72593 |
| 149 | 47,361  | 1,32831 | 377 | 94,0523 | 1,64792 | 605 | 141,61  | 1,87409 |
| 150 | 106,255 | 1,71233 | 378 | 88,0225 | 1,61396 | 606 | 69,4263 | 1,49796 |
| 151 | 70,6096 | 1,50594 | 379 | 101,225 | 1,68643 | 607 | 212,655 | 2,12953 |
| 152 | 69,8863 | 1,50108 | 380 | 68,1474 | 1,48924 | 608 | 77,6072 | 1,55133 |
| 153 | 51,3827 | 1,36278 | 381 | 121,087 | 1,78411 | 609 | 81,1888 | 1,57349 |
| 154 | 48,6947 | 1,33996 | 382 | 61,5015 | 1,44198 | 610 | 79,374  | 1,56235 |
| 155 | 74,7382 | 1,53308 | 383 | 52,6199 | 1,373   | 611 | 121,439 | 1,78573 |
| 156 | 97,6263 | 1,66735 | 384 | 94,8747 | 1,65244 | 612 | 51,3575 | 1,36257 |
| 157 | 83,8975 | 1,5898  | 385 | 90,6389 | 1,62889 | 613 | 64,3966 | 1,46298 |
| 158 | 86,4692 | 1,60496 | 386 | 82,1702 | 1,57944 | 614 | 43,8288 | 1,29635 |
| 159 | 44,0967 | 1,29883 | 387 | 126,863 | 1,81042 | 615 | 122,845 | 1,7922  |
| 160 | 44,0166 | 1,29809 | 388 | 84,3998 | 1,59278 | 616 | 92,4594 | 1,6391  |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 161 | 116,585 | 1,76299 | 389 | 82,6278 | 1,5822  | 617 | 82,8088 | 1,58329 |
| 162 | 44,1618 | 1,29944 | 390 | 110,79  | 1,73496 | 618 | 143,932 | 1,88369 |
| 163 | 53,2435 | 1,3781  | 391 | 73,4646 | 1,52482 | 619 | 73,5434 | 1,52533 |
| 164 | 67,8461 | 1,48716 | 392 | 107,338 | 1,71779 | 620 | 74,1102 | 1,52902 |
| 165 | 66,7818 | 1,47979 | 393 | 115,244 | 1,75659 | 621 | 170,614 | 1,9871  |
| 166 | 41,8401 | 1,27757 | 394 | 45,0913 | 1,30797 | 622 | 239,44  | 2,21042 |
| 167 | 50,2732 | 1,35346 | 395 | 92,1991 | 1,63765 | 623 | 103,156 | 1,69647 |
| 168 | 64,3263 | 1,46247 | 396 | 170,954 | 1,98835 | 624 | 141,453 | 1,87343 |
| 169 | 110,95  | 1,73575 | 397 | 135,885 | 1,84994 | 625 | 73,836  | 1,52724 |
| 170 | 235,928 | 2,20018 | 398 | 74,1336 | 1,52917 | 626 | 100,598 | 1,68314 |
| 171 | 51,2887 | 1,36199 | 399 | 98,2348 | 1,67061 | 627 | 73,0497 | 1,52211 |
| 172 | 79,8917 | 1,56554 | 400 | 104,231 | 1,702   | 628 | 90,3704 | 1,62737 |
| 173 | 111,755 | 1,7397  | 401 | 52,2865 | 1,37026 | 629 | 145,8   | 1,89134 |
| 174 | 46,8649 | 1,32393 | 402 | 183,791 | 2,03411 | 630 | 193,782 | 2,06823 |
| 175 | 102,838 | 1,69482 | 403 | 75,944  | 1,54081 | 631 | 146,864 | 1,89567 |
| 176 | 55,5595 | 1,39666 | 404 | 50,7594 | 1,35756 | 632 | 188,462 | 2,05022 |
| 177 | 108,48  | 1,72351 | 405 | 103,072 | 1,69603 | 633 | 116,565 | 1,76289 |
| 178 | 61,1853 | 1,43965 | 406 | 84,2658 | 1,59199 | 634 | 125,24  | 1,80311 |
| 179 | 56,6821 | 1,40547 | 407 | 70,3906 | 1,50447 | 635 | 102,153 | 1,69127 |
| 180 | 44,5564 | 1,30307 | 408 | 86,736  | 1,60651 | 636 | 94,6794 | 1,65137 |
| 181 | 44,7876 | 1,3052  | 409 | 84,0526 | 1,59072 | 637 | 68,7655 | 1,49347 |
| 182 | 98,1203 | 1,67    | 410 | 68,9593 | 1,49479 | 638 | 80,7166 | 1,5706  |
| 183 | 49,3085 | 1,34524 | 411 | 53,3456 | 1,37893 | 639 | 95,7401 | 1,65716 |
| 184 | 52,9432 | 1,37565 | 412 | 60,7369 | 1,43632 | 640 | 88,049  | 1,61411 |
| 185 | 52,5493 | 1,37243 | 413 | 184,232 | 2,03564 | 641 | 97,0897 | 1,66446 |
| 186 | 47,501  | 1,32955 | 414 | 71,7117 | 1,51329 | 642 | 95,3897 | 1,65525 |
| 187 | 46,453  | 1,32026 | 415 | 54,8729 | 1,39121 | 643 | 147,775 | 1,89935 |
| 188 | 107,272 | 1,71746 | 416 | 167,688 | 1,97633 | 644 | 119,594 | 1,77716 |
| 189 | 58,3665 | 1,41846 | 417 | 68,0759 | 1,48875 | 645 | 107,026 | 1,71622 |
| 190 | 79,2984 | 1,56188 | 418 | 65,2128 | 1,46878 | 646 | 116,461 | 1,7624  |
| 191 | 89,4411 | 1,62209 | 419 | 77,108  | 1,54819 | 647 | 89,0555 | 1,61989 |
| 192 | 153,697 | 1,92295 | 420 | 57,1698 | 1,40926 | 648 | 89,2211 | 1,62084 |
| 193 | 59,925  | 1,43026 | 421 | 167,11  | 1,97419 | 649 | 68,8831 | 1,49427 |
| 194 | 83,1195 | 1,58515 | 422 | 76,3602 | 1,54346 | 650 | 176,172 | 2,00722 |
| 195 | 110,521 | 1,73364 | 423 | 113,074 | 1,74613 | 651 | 62,2116 | 1,44719 |
| 196 | 52,1168 | 1,36886 | 424 | 224,643 | 2,16655 | 652 | 86,6379 | 1,60594 |
| 197 | 47,2074 | 1,32696 | 425 | 140,177 | 1,8681  | 653 | 78,5561 | 1,55727 |
| 198 | 69,5169 | 1,49858 | 426 | 68,2791 | 1,49014 | 654 | 124,677 | 1,80056 |
| 199 | 87,506  | 1,61098 | 427 | 62,5361 | 1,44956 | 655 | 116,793 | 1,76397 |
| 200 | 48,1543 | 1,33527 | 428 | 143,869 | 1,88343 | 656 | 95,9259 | 1,65817 |
| 201 | 68,5439 | 1,49195 | 429 | 46,7472 | 1,32288 | 657 | 101,457 | 1,68764 |
| 202 | 129,344 | 1,82148 | 430 | 92,3062 | 1,63824 | 658 | 136,497 | 1,85255 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 203 | 106,439 | 1,71326 | 431 | 84,2398 | 1,59183 | 659 | 107,963 | 1,72093 |
| 204 | 50,8869 | 1,35863 | 432 | 88,1651 | 1,61478 | 660 | 79,91   | 1,56566 |
| 205 | 46,7801 | 1,32317 | 433 | 48,3759 | 1,33719 | 661 | 127,413 | 1,81289 |
| 206 | 64,3847 | 1,46289 | 434 | 61,6434 | 1,44302 | 662 | 120,396 | 1,7809  |
| 207 | 123,465 | 1,79504 | 435 | 63,3228 | 1,45527 | 663 | 111,293 | 1,73744 |
| 208 | 49,2689 | 1,3449  | 436 | 100,008 | 1,68003 | 664 | 59,3093 | 1,42563 |
| 209 | 67,2812 | 1,48326 | 437 | 45,1329 | 1,30835 | 665 | 91,0497 | 1,6312  |
| 210 | 130,519 | 1,82666 | 438 | 46,0969 | 1,31707 | 666 | 128,157 | 1,81621 |
| 211 | 68,1691 | 1,48939 | 439 | 65,858  | 1,47333 | 667 | 95,5507 | 1,65613 |
| 212 | 58,663  | 1,42072 | 440 | 64,2247 | 1,46175 | 668 | 132,068 | 1,83345 |
| 213 | 51,3848 | 1,36279 | 441 | 81,2539 | 1,57388 | 669 | 86,8378 | 1,6071  |
| 214 | 137,838 | 1,85825 | 442 | 65,8175 | 1,47304 | 670 | 161,146 | 1,95177 |
| 215 | 153,564 | 1,92243 | 443 | 62,1397 | 1,44667 | 671 | 46,3126 | 1,319   |
| 216 | 72,245  | 1,51682 | 444 | 63,1605 | 1,45409 | 672 | 116,184 | 1,76108 |
| 217 | 312,487 | 2,40334 | 445 | 50,0695 | 1,35173 | 673 | 122,672 | 1,79141 |
| 218 | 50,4028 | 1,35455 | 446 | 47,4964 | 1,32951 | 674 | 127,595 | 1,8137  |
| 219 | 181,349 | 2,02558 | 447 | 81,4847 | 1,57529 | 675 | 117,829 | 1,76888 |
| 220 | 45,5476 | 1,31212 | 448 | 106,161 | 1,71185 | 676 | 115,183 | 1,7563  |
| 221 | 64,4259 | 1,46319 | 449 | 56,3317 | 1,40273 | 677 | 111,944 | 1,74062 |
| 222 | 116,696 | 1,76351 | 450 | 96,9407 | 1,66366 | 678 | 113,867 | 1,74997 |
| 223 | 177,365 | 2,01148 | 451 | 107,668 | 1,71945 | 679 | 112,123 | 1,7415  |
| 224 | 170,922 | 1,98823 | 452 | 63,234  | 1,45462 | 680 | 121,054 | 1,78395 |
| 225 | 172,279 | 1,99318 | 453 | 48,1161 | 1,33493 | 681 | 120,82  | 1,78287 |
| 226 | 182,905 | 2,03102 | 454 | 59,8211 | 1,42948 | 682 | 112,903 | 1,7453  |
| 227 | 49,8038 | 1,34947 | 455 | 63,1829 | 1,45425 | 683 | 117,849 | 1,76897 |
| 228 | 169,109 | 1,98158 | 456 | 69,4685 | 1,49825 | 684 | 174,768 | 2,00218 |

### **NOVEMBER 2019 Analysis Information**

|                              |                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------|
| Species                      | T. Thynnus fattened (Tzoumas 2009)                                                  |
| Site                         |                                                                                     |
| Cage                         |                                                                                     |
| Recording date               | 02.11.2019 10:39                                                                    |
| Comments                     |                                                                                     |
| Project folder               | C:\Documents and Settings\Administrator\Desktop\02.11.2019 ICCAT PROJECT            |
| Datafile folder              | C:\Documents and Settings\Administrator\Desktop\02.11.2019 ICCAT PROJECT\02.11.2019 |
| Calibration filename left    | 20120424_151827_00111CF020A8_Left.Cam                                               |
| Calibration filename right   | 20120424_151827_00111CF020A3_Right.Cam                                              |
| Program version              | 1.1.1.12713                                                                         |
| Computer name                | AM100TOUGHBOOK                                                                      |
|                              |                                                                                     |
| Mean weight (kg)             | 104,367                                                                             |
| Minimum weight (kg)          | 52,7471                                                                             |
| Maximum weight (kg)          | 355,331                                                                             |
| Weight S.D. (kg)             | 47,4778                                                                             |
| Weight CV (%)                | 45,4913                                                                             |
| Sample size (weight)         | 684                                                                                 |
| Samples out of formula range | 0                                                                                   |
| Mean FL (m)                  | 1,67121                                                                             |
| Minimum FL (m)               | 1,37405                                                                             |
| Maximum FL (m)               | 2,50237                                                                             |
| FL S.D. (m)                  | 0,217109                                                                            |
| FL CV (%)                    | 12,9912                                                                             |
| Sample size (FL)             | 684                                                                                 |
| Positive Count               | 0                                                                                   |
| Negative Count               | 0                                                                                   |
| Total Count                  | 0                                                                                   |

In **Table 10** raw data of the study performed in 2 November 2019 are given.

**Table 10. Lengths and weights of BFT (NOVEMBER 2019 Analysis)( Raw Data)**

| ID | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  |
|----|-------------|---------|-----|-------------|---------|-----|-------------|---------|
|    |             |         |     |             |         |     |             |         |
| 1  | 155,723     | 1,93088 | 229 | 238,136     | 2,20663 | 457 | 66,1486     | 1,47537 |
| 2  | 136,792     | 1,85381 | 230 | 270,533     | 2,29688 | 458 | 149,278     | 1,9054  |
| 3  | 142,63      | 1,87832 | 231 | 302,127     | 2,37801 | 459 | 74,9943     | 1,53473 |
| 4  | 102,829     | 1,69478 | 232 | 214,504     | 2,13533 | 460 | 97,9704     | 1,66919 |
| 5  | 118,442     | 1,77176 | 233 | 234,811     | 2,1969  | 461 | 97,4281     | 1,66628 |
| 6  | 74,7609     | 1,53322 | 234 | 392,392     | 2,58162 | 462 | 147,716     | 1,89911 |
| 7  | 74,3246     | 1,53041 | 235 | 266,592     | 2,28631 | 463 | 108,311     | 1,72267 |
| 8  | 91,5257     | 1,63388 | 236 | 232,591     | 2,19035 | 464 | 92,6504     | 1,64016 |
| 9  | 76,8735     | 1,54671 | 237 | 220,44      | 2,15373 | 465 | 150,57      | 1,91057 |
| 10 | 87,7545     | 1,61241 | 238 | 217,296     | 2,14403 | 466 | 72,8038     | 1,52049 |
| 11 | 75,0764     | 1,53525 | 239 | 154,935     | 1,92781 | 467 | 76,0416     | 1,54143 |
| 12 | 160,019     | 1,94747 | 240 | 230,231     | 2,18334 | 468 | 96,6976     | 1,66235 |
| 13 | 139,542     | 1,86544 | 241 | 257,301     | 2,26097 | 469 | 135,524     | 1,84839 |
| 14 | 71,2505     | 1,51022 | 242 | 218,161     | 2,1467  | 470 | 65,846      | 1,47325 |
| 15 | 88,9906     | 1,61952 | 243 | 182,605     | 2,02997 | 471 | 68,7872     | 1,49362 |
| 16 | 94,6939     | 1,65145 | 244 | 167,143     | 1,97431 | 472 | 147,682     | 1,89898 |
| 17 | 99,7791     | 1,67882 | 245 | 256,97      | 2,26005 | 473 | 92,8867     | 1,64147 |
| 18 | 214,156     | 2,13424 | 246 | 220,692     | 2,1545  | 474 | 124,179     | 1,7983  |
| 19 | 87,534      | 1,61114 | 247 | 232,226     | 2,18927 | 475 | 117,383     | 1,76677 |
| 20 | 70,677      | 1,50639 | 248 | 185,672     | 2,04063 | 476 | 104,135     | 1,70151 |
| 21 | 147,125     | 1,89672 | 249 | 219,624     | 2,15122 | 477 | 111,225     | 1,7371  |
| 22 | 100,489     | 1,68256 | 250 | 186,061     | 2,04197 | 478 | 113,454     | 1,74797 |
| 23 | 67,8387     | 1,48711 | 251 | 314,843     | 2,40902 | 479 | 149,32      | 1,90557 |
| 24 | 121,424     | 1,78566 | 252 | 218,378     | 2,14737 | 480 | 96,2811     | 1,66009 |
| 25 | 110,365     | 1,73287 | 253 | 221,232     | 2,15615 | 481 | 103,219     | 1,6968  |
| 26 | 70,2426     | 1,50348 | 254 | 132,888     | 1,83702 | 482 | 108,009     | 1,72116 |
| 27 | 72,4676     | 1,51828 | 255 | 233,634     | 2,19343 | 483 | 129,262     | 1,82111 |
| 28 | 216,96      | 2,14298 | 256 | 170,641     | 1,9872  | 484 | 120,631     | 1,78199 |
| 29 | 67,1806     | 1,48256 | 257 | 225,7       | 2,16975 | 485 | 149,164     | 1,90494 |
| 30 | 73,8849     | 1,52755 | 258 | 257,816     | 2,26239 | 486 | 165,102     | 1,9667  |
| 31 | 275,801     | 2,31084 | 259 | 222,546     | 2,16017 | 487 | 162,263     | 1,95601 |
| 32 | 216,06      | 2,14019 | 260 | 211,836     | 2,12695 | 488 | 74,0797     | 1,52882 |

|           |         |         |            |         |         |            |         |         |
|-----------|---------|---------|------------|---------|---------|------------|---------|---------|
| <b>33</b> | 115,082 | 1,75581 | <b>261</b> | 151,09  | 1,91264 | <b>489</b> | 140,98  | 1,87146 |
| <b>34</b> | 106,198 | 1,71203 | <b>262</b> | 115,907 | 1,75976 | <b>490</b> | 75,6822 | 1,53914 |
| <b>35</b> | 108,183 | 1,72203 | <b>263</b> | 73,5578 | 1,52543 | <b>491</b> | 73,0107 | 1,52185 |
| <b>36</b> | 87,2146 | 1,60929 | <b>264</b> | 146,331 | 1,8935  | <b>492</b> | 88,0109 | 1,61389 |
| <b>37</b> | 162,075 | 1,9553  | <b>265</b> | 90,2446 | 1,62666 | <b>493</b> | 99,3295 | 1,67644 |
| <b>38</b> | 122,606 | 1,79111 | <b>266</b> | 70,6585 | 1,50627 | <b>494</b> | 90,3408 | 1,6272  |
| <b>39</b> | 142,149 | 1,87632 | <b>267</b> | 100,352 | 1,68184 | <b>495</b> | 113,619 | 1,74877 |
| <b>40</b> | 73,2411 | 1,52336 | <b>268</b> | 121,33  | 1,78523 | <b>496</b> | 102,032 | 1,69064 |
| <b>41</b> | 174,943 | 2,00281 | <b>269</b> | 243,39  | 2,22182 | <b>497</b> | 93,8416 | 1,64676 |
| <b>42</b> | 141,527 | 1,87374 | <b>270</b> | 145,951 | 1,89195 | <b>498</b> | 91,0639 | 1,63128 |
| <b>43</b> | 72,6232 | 1,51931 | <b>271</b> | 72,2668 | 1,51696 | <b>499</b> | 73,2536 | 1,52344 |
| <b>44</b> | 159,467 | 1,94535 | <b>272</b> | 188,743 | 2,05117 | <b>500</b> | 96,2205 | 1,65977 |
| <b>45</b> | 73,7365 | 1,52659 | <b>273</b> | 115,072 | 1,75576 | <b>501</b> | 139,288 | 1,86437 |
| <b>46</b> | 71,486  | 1,51179 | <b>274</b> | 104,638 | 1,70409 | <b>502</b> | 66,2041 | 1,47576 |
| <b>47</b> | 97,8049 | 1,66831 | <b>275</b> | 206,431 | 2,10974 | <b>503</b> | 68,0286 | 1,48842 |
| <b>48</b> | 90,823  | 1,62993 | <b>276</b> | 123,331 | 1,79443 | <b>504</b> | 97,755  | 1,66804 |
| <b>49</b> | 73,7975 | 1,52699 | <b>277</b> | 240,271 | 2,21283 | <b>505</b> | 66,8466 | 1,48024 |
| <b>50</b> | 71,7677 | 1,51366 | <b>278</b> | 174,871 | 2,00255 | <b>506</b> | 179,255 | 2,0182  |
| <b>51</b> | 98,5503 | 1,67229 | <b>279</b> | 237,476 | 2,2047  | <b>507</b> | 215,332 | 2,13792 |
| <b>52</b> | 147,918 | 1,89993 | <b>280</b> | 218,52  | 2,14781 | <b>508</b> | 87,3098 | 1,60984 |
| <b>53</b> | 75,4949 | 1,53794 | <b>281</b> | 213,217 | 2,1313  | <b>509</b> | 123,534 | 1,79536 |
| <b>54</b> | 122,099 | 1,78878 | <b>282</b> | 218,762 | 2,14856 | <b>510</b> | 179,575 | 2,01933 |
| <b>55</b> | 70,0611 | 1,50226 | <b>283</b> | 257,63  | 2,26187 | <b>511</b> | 115,097 | 1,75589 |
| <b>56</b> | 87,4157 | 1,61046 | <b>284</b> | 230,688 | 2,1847  | <b>512</b> | 157,741 | 1,93871 |
| <b>57</b> | 160,63  | 1,9498  | <b>285</b> | 192,716 | 2,06465 | <b>513</b> | 103,699 | 1,69927 |
| <b>58</b> | 111,649 | 1,73918 | <b>286</b> | 241,492 | 2,21636 | <b>514</b> | 248,983 | 2,23774 |
| <b>59</b> | 99,0686 | 1,67505 | <b>287</b> | 217,437 | 2,14446 | <b>515</b> | 101,917 | 1,69004 |
| <b>60</b> | 70,1247 | 1,50268 | <b>288</b> | 245,396 | 2,22755 | <b>516</b> | 90,706  | 1,62927 |
| <b>61</b> | 103,151 | 1,69644 | <b>289</b> | 214,119 | 2,13412 | <b>517</b> | 151,436 | 1,91402 |
| <b>62</b> | 162,999 | 1,95879 | <b>290</b> | 227,161 | 2,17415 | <b>518</b> | 87,5186 | 1,61105 |
| <b>63</b> | 74,1605 | 1,52934 | <b>291</b> | 218,577 | 2,14799 | <b>519</b> | 100,54  | 1,68283 |
| <b>64</b> | 89,8106 | 1,62419 | <b>292</b> | 234,526 | 2,19606 | <b>520</b> | 108,006 | 1,72114 |
| <b>65</b> | 68,9742 | 1,49489 | <b>293</b> | 259,745 | 2,26769 | <b>521</b> | 122,165 | 1,78908 |
| <b>66</b> | 66,7429 | 1,47952 | <b>294</b> | 226,238 | 2,17137 | <b>522</b> | 70,2649 | 1,50363 |
| <b>67</b> | 65,9896 | 1,47425 | <b>295</b> | 259,726 | 2,26764 | <b>523</b> | 123,436 | 1,79491 |
| <b>68</b> | 73,6109 | 1,52577 | <b>296</b> | 257,98  | 2,26284 | <b>524</b> | 98,3033 | 1,67097 |
| <b>69</b> | 69,8401 | 1,50076 | <b>297</b> | 169,476 | 1,98293 | <b>525</b> | 85,3955 | 1,59867 |
| <b>70</b> | 75,4158 | 1,53743 | <b>298</b> | 193,713 | 2,068   | <b>526</b> | 161,089 | 1,95155 |
| <b>71</b> | 74,4297 | 1,53109 | <b>299</b> | 66,8502 | 1,48027 | <b>527</b> | 162,362 | 1,95638 |
| <b>72</b> | 143,536 | 1,88206 | <b>300</b> | 119,238 | 1,7755  | <b>528</b> | 108,77  | 1,72496 |

|            |         |         |            |         |         |            |         |         |
|------------|---------|---------|------------|---------|---------|------------|---------|---------|
| <b>73</b>  | 68,8949 | 1,49435 | <b>301</b> | 113,428 | 1,74784 | <b>529</b> | 108,709 | 1,72466 |
| <b>74</b>  | 90,6472 | 1,62893 | <b>302</b> | 123,412 | 1,7948  | <b>530</b> | 115,147 | 1,75612 |
| <b>75</b>  | 66,6954 | 1,47919 | <b>303</b> | 152,448 | 1,91803 | <b>531</b> | 132,996 | 1,83749 |
| <b>76</b>  | 95,9548 | 1,65832 | <b>304</b> | 110,747 | 1,73475 | <b>532</b> | 128,949 | 1,81972 |
| <b>77</b>  | 146,735 | 1,89514 | <b>305</b> | 149,691 | 1,90706 | <b>533</b> | 180,761 | 2,02351 |
| <b>78</b>  | 98,2561 | 1,67072 | <b>306</b> | 147,173 | 1,89692 | <b>534</b> | 105,951 | 1,71078 |
| <b>79</b>  | 72,5042 | 1,51853 | <b>307</b> | 142,323 | 1,87705 | <b>535</b> | 104,876 | 1,70531 |
| <b>80</b>  | 95,0968 | 1,65365 | <b>308</b> | 88,4343 | 1,61633 | <b>536</b> | 155,751 | 1,93099 |
| <b>81</b>  | 73,8588 | 1,52739 | <b>309</b> | 122,247 | 1,78946 | <b>537</b> | 197,092 | 2,07927 |
| <b>82</b>  | 106,168 | 1,71188 | <b>310</b> | 89,7417 | 1,6238  | <b>538</b> | 122,428 | 1,79029 |
| <b>83</b>  | 89,501  | 1,62243 | <b>311</b> | 67,7747 | 1,48667 | <b>539</b> | 142,655 | 1,87842 |
| <b>84</b>  | 98,8648 | 1,67397 | <b>312</b> | 169,491 | 1,98298 | <b>540</b> | 142,092 | 1,87609 |
| <b>85</b>  | 70,4833 | 1,50509 | <b>313</b> | 69,1081 | 1,4958  | <b>541</b> | 80,0461 | 1,56649 |
| <b>86</b>  | 106,982 | 1,716   | <b>314</b> | 149,605 | 1,90671 | <b>542</b> | 87,0105 | 1,60811 |
| <b>87</b>  | 70,121  | 1,50266 | <b>315</b> | 118,029 | 1,76982 | <b>543</b> | 87,335  | 1,60999 |
| <b>88</b>  | 70,4068 | 1,50458 | <b>316</b> | 70,8684 | 1,50767 | <b>544</b> | 67,0195 | 1,48145 |
| <b>89</b>  | 145,355 | 1,88952 | <b>317</b> | 70,7937 | 1,50717 | <b>545</b> | 159,043 | 1,94372 |
| <b>90</b>  | 120,043 | 1,77926 | <b>318</b> | 145,911 | 1,89179 | <b>546</b> | 103,419 | 1,69783 |
| <b>91</b>  | 71,1965 | 1,50986 | <b>319</b> | 92,7019 | 1,64045 | <b>547</b> | 97,4228 | 1,66626 |
| <b>92</b>  | 159,102 | 1,94395 | <b>320</b> | 164,548 | 1,96462 | <b>548</b> | 88,045  | 1,61409 |
| <b>93</b>  | 83,633  | 1,58822 | <b>321</b> | 162,138 | 1,95554 | <b>549</b> | 90,1482 | 1,62611 |
| <b>94</b>  | 69,7538 | 1,50018 | <b>322</b> | 87,0638 | 1,60842 | <b>550</b> | 75,6746 | 1,53909 |
| <b>95</b>  | 68,726  | 1,4932  | <b>323</b> | 75,7785 | 1,53975 | <b>551</b> | 75,3371 | 1,53693 |
| <b>96</b>  | 66,3731 | 1,47694 | <b>324</b> | 86,676  | 1,60616 | <b>552</b> | 120,787 | 1,78271 |
| <b>97</b>  | 118,631 | 1,77265 | <b>325</b> | 69,3367 | 1,49736 | <b>553</b> | 89,4476 | 1,62213 |
| <b>98</b>  | 187,387 | 2,04653 | <b>326</b> | 88,1929 | 1,61494 | <b>554</b> | 93,4486 | 1,64459 |
| <b>99</b>  | 90,6267 | 1,62882 | <b>327</b> | 74,7111 | 1,5329  | <b>555</b> | 109,392 | 1,72806 |
| <b>100</b> | 75,3522 | 1,53702 | <b>328</b> | 71,7995 | 1,51387 | <b>556</b> | 115,373 | 1,75721 |
| <b>101</b> | 74,3681 | 1,53069 | <b>329</b> | 97,5337 | 1,66685 | <b>557</b> | 70,1046 | 1,50255 |
| <b>102</b> | 99,7611 | 1,67872 | <b>330</b> | 217,708 | 2,1453  | <b>558</b> | 110,608 | 1,73407 |
| <b>103</b> | 74,7876 | 1,5334  | <b>331</b> | 87,7034 | 1,61212 | <b>559</b> | 90,2631 | 1,62676 |
| <b>104</b> | 123,728 | 1,79624 | <b>332</b> | 83,4929 | 1,58739 | <b>560</b> | 150,515 | 1,91035 |
| <b>105</b> | 166,195 | 1,97078 | <b>333</b> | 121,021 | 1,7838  | <b>561</b> | 74,3829 | 1,53078 |
| <b>106</b> | 159,16  | 1,94417 | <b>334</b> | 164,471 | 1,96433 | <b>562</b> | 144,133 | 1,88451 |
| <b>107</b> | 93,9322 | 1,64726 | <b>335</b> | 143,105 | 1,88028 | <b>563</b> | 104,964 | 1,70576 |
| <b>108</b> | 75,1232 | 1,53555 | <b>336</b> | 117,14  | 1,76562 | <b>564</b> | 104,709 | 1,70445 |
| <b>109</b> | 216,979 | 2,14304 | <b>337</b> | 182,329 | 2,02901 | <b>565</b> | 106,903 | 1,7156  |
| <b>110</b> | 75,0519 | 1,5351  | <b>338</b> | 65,8206 | 1,47307 | <b>566</b> | 145,946 | 1,89193 |
| <b>111</b> | 64,7705 | 1,46564 | <b>339</b> | 73,5429 | 1,52533 | <b>567</b> | 95,4569 | 1,65562 |
| <b>112</b> | 123,871 | 1,7969  | <b>340</b> | 148,929 | 1,904   | <b>568</b> | 96,2819 | 1,6601  |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 113 | 143,692 | 1,8827  | 341 | 121,681 | 1,78685 | 569 | 100,319 | 1,68167 |
| 114 | 73,5665 | 1,52548 | 342 | 98,1966 | 1,6704  | 570 | 131,36  | 1,83035 |
| 115 | 64,9456 | 1,46688 | 343 | 67,0223 | 1,48147 | 571 | 166,711 | 1,9727  |
| 116 | 121,671 | 1,78681 | 344 | 92,2948 | 1,63818 | 572 | 70,7383 | 1,5068  |
| 117 | 144,986 | 1,88802 | 345 | 65,2854 | 1,46929 | 573 | 76,0455 | 1,54145 |
| 118 | 122,479 | 1,79053 | 346 | 117,995 | 1,76966 | 574 | 158,16  | 1,94033 |
| 119 | 149,104 | 1,90471 | 347 | 74,4146 | 1,53099 | 575 | 94,4462 | 1,65009 |
| 120 | 69,2165 | 1,49654 | 348 | 122,756 | 1,7918  | 576 | 90,2413 | 1,62664 |
| 121 | 75,5402 | 1,53823 | 349 | 74,5368 | 1,53178 | 577 | 93,2109 | 1,64327 |
| 122 | 73,5446 | 1,52534 | 350 | 166,376 | 1,97146 | 578 | 149,857 | 1,90772 |
| 123 | 87,1503 | 1,60892 | 351 | 85,5009 | 1,59929 | 579 | 150,83  | 1,91161 |
| 124 | 156,925 | 1,93555 | 352 | 153,382 | 1,92171 | 580 | 91,1953 | 1,63202 |
| 125 | 120,13  | 1,77966 | 353 | 102,371 | 1,6924  | 581 | 112,295 | 1,74234 |
| 126 | 69,0305 | 1,49528 | 354 | 122,539 | 1,7908  | 582 | 78,3835 | 1,55619 |
| 127 | 146,092 | 1,89253 | 355 | 102,521 | 1,69318 | 583 | 120,169 | 1,77984 |
| 128 | 122,715 | 1,79161 | 356 | 98,1416 | 1,67011 | 584 | 66,2811 | 1,4763  |
| 129 | 123,01  | 1,79296 | 357 | 85,7929 | 1,601   | 585 | 90,5582 | 1,62843 |
| 130 | 65,5933 | 1,47147 | 358 | 122,405 | 1,79018 | 586 | 149,442 | 1,90606 |
| 131 | 64,892  | 1,4665  | 359 | 182,049 | 2,02803 | 587 | 89,1492 | 1,62042 |
| 132 | 97,684  | 1,66766 | 360 | 218,597 | 2,14805 | 588 | 163,395 | 1,96028 |
| 133 | 65,6    | 1,47151 | 361 | 142,473 | 1,87767 | 589 | 87,8786 | 1,61313 |
| 134 | 120,175 | 1,77987 | 362 | 138,918 | 1,86281 | 590 | 150,624 | 1,91079 |
| 135 | 67,3262 | 1,48357 | 363 | 242,677 | 2,21977 | 591 | 92,2605 | 1,63799 |
| 136 | 113,186 | 1,74667 | 364 | 82,0329 | 1,57861 | 592 | 88,2799 | 1,61544 |
| 137 | 65,2646 | 1,46914 | 365 | 139,451 | 1,86506 | 593 | 75,5507 | 1,5383  |
| 138 | 65,1077 | 1,46803 | 366 | 192,447 | 2,06374 | 594 | 165,215 | 1,96712 |
| 139 | 66,0077 | 1,47438 | 367 | 234,908 | 2,19719 | 595 | 67,3837 | 1,48397 |
| 140 | 66,9028 | 1,48064 | 368 | 81,8948 | 1,57777 | 596 | 76,1018 | 1,54181 |
| 141 | 66,0361 | 1,47458 | 369 | 118,786 | 1,77338 | 597 | 80,1323 | 1,56702 |
| 142 | 85,0437 | 1,59659 | 370 | 72,6572 | 1,51953 | 598 | 75,1677 | 1,53584 |
| 143 | 77,0342 | 1,54772 | 371 | 162,963 | 1,95866 | 599 | 120,977 | 1,7836  |
| 144 | 98,5431 | 1,67225 | 372 | 155,98  | 1,93188 | 600 | 120,598 | 1,78184 |
| 145 | 144,346 | 1,88539 | 373 | 67,7352 | 1,4864  | 601 | 131,654 | 1,83164 |
| 146 | 67,8314 | 1,48706 | 374 | 156,283 | 1,93306 | 602 | 70,4231 | 1,50469 |
| 147 | 66,1066 | 1,47508 | 375 | 123,568 | 1,79551 | 603 | 143,609 | 1,88236 |
| 148 | 67,8068 | 1,48689 | 376 | 69,3138 | 1,4972  | 604 | 91,0555 | 1,63124 |
| 149 | 75,7886 | 1,53982 | 377 | 164,247 | 1,96349 | 605 | 148,804 | 1,9035  |
| 150 | 164,881 | 1,96587 | 378 | 91,8968 | 1,63596 | 606 | 100,496 | 1,6826  |
| 151 | 66,4129 | 1,47722 | 379 | 69,6245 | 1,49931 | 607 | 145,222 | 1,88898 |
| 152 | 70,2929 | 1,50382 | 380 | 73,0903 | 1,52237 | 608 | 129,569 | 1,82247 |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 153 | 70,4326 | 1,50475 | 381 | 136,483 | 1,85249 | 609 | 136,698 | 1,85341 |
| 154 | 65,379  | 1,46995 | 382 | 118,537 | 1,77221 | 610 | 71,6097 | 1,51261 |
| 155 | 67,264  | 1,48314 | 383 | 66,1605 | 1,47545 | 611 | 85,6525 | 1,60018 |
| 156 | 65,3797 | 1,46996 | 384 | 90,473  | 1,62795 | 612 | 129,365 | 1,82157 |
| 157 | 128,157 | 1,81621 | 385 | 154,516 | 1,92617 | 613 | 87,6472 | 1,6118  |
| 158 | 94,5609 | 1,65072 | 386 | 143,958 | 1,8838  | 614 | 92,7898 | 1,64094 |
| 159 | 66,9281 | 1,48081 | 387 | 65,561  | 1,47124 | 615 | 140,599 | 1,86987 |
| 160 | 74,4858 | 1,53145 | 388 | 75,0142 | 1,53485 | 616 | 91,9662 | 1,63635 |
| 161 | 123,206 | 1,79386 | 389 | 101,296 | 1,6868  | 617 | 163,46  | 1,96053 |
| 162 | 123,43  | 1,79488 | 390 | 65,5752 | 1,47134 | 618 | 90,8988 | 1,63035 |
| 163 | 77,1178 | 1,54825 | 391 | 87,543  | 1,61119 | 619 | 142,28  | 1,87687 |
| 164 | 67,3138 | 1,48349 | 392 | 86,9662 | 1,60785 | 620 | 126,988 | 1,81098 |
| 165 | 85,9569 | 1,60196 | 393 | 99,1554 | 1,67551 | 621 | 97,6737 | 1,6676  |
| 166 | 124,099 | 1,79793 | 394 | 178,582 | 2,01581 | 622 | 158,64  | 1,94218 |
| 167 | 69,5073 | 1,49851 | 395 | 150,066 | 1,90856 | 623 | 64,7711 | 1,46564 |
| 168 | 86,8881 | 1,6074  | 396 | 75,903  | 1,54055 | 624 | 102,469 | 1,69291 |
| 169 | 65,2187 | 1,46882 | 397 | 221,555 | 2,15714 | 625 | 66,8583 | 1,48033 |
| 170 | 65,2294 | 1,4689  | 398 | 138,302 | 1,86021 | 626 | 66,0271 | 1,47452 |
| 171 | 71,4265 | 1,5114  | 399 | 97,9665 | 1,66917 | 627 | 119,757 | 1,77792 |
| 172 | 72,6018 | 1,51917 | 400 | 95,2208 | 1,65433 | 628 | 114,072 | 1,75096 |
| 173 | 120,806 | 1,7828  | 401 | 118,717 | 1,77306 | 629 | 140,802 | 1,87072 |
| 174 | 65,9584 | 1,47404 | 402 | 166,053 | 1,97025 | 630 | 124,764 | 1,80096 |
| 175 | 98,9801 | 1,67458 | 403 | 66,8205 | 1,48006 | 631 | 70,8722 | 1,5077  |
| 176 | 70,1737 | 1,50301 | 404 | 73,6556 | 1,52606 | 632 | 132,261 | 1,83429 |
| 177 | 145,366 | 1,88957 | 405 | 74,0352 | 1,52853 | 633 | 130,888 | 1,82828 |
| 178 | 65,9438 | 1,47393 | 406 | 122,806 | 1,79203 | 634 | 71,1751 | 1,50972 |
| 179 | 75,044  | 1,53505 | 407 | 151,67  | 1,91495 | 635 | 85,4882 | 1,59921 |
| 180 | 71,0305 | 1,50876 | 408 | 93,4794 | 1,64476 | 636 | 67,7649 | 1,48661 |
| 181 | 69,1851 | 1,49633 | 409 | 170,396 | 1,9863  | 637 | 86,2189 | 1,60349 |
| 182 | 160,603 | 1,9497  | 410 | 79,9299 | 1,56578 | 638 | 78,6881 | 1,55809 |
| 183 | 167,459 | 1,97548 | 411 | 69,4768 | 1,49831 | 639 | 151,538 | 1,91442 |
| 184 | 67,0058 | 1,48135 | 412 | 88,9032 | 1,61902 | 640 | 147,79  | 1,89941 |
| 185 | 93,3519 | 1,64405 | 413 | 164,874 | 1,96584 | 641 | 83,5048 | 1,58746 |
| 186 | 91,6413 | 1,63453 | 414 | 164,755 | 1,9654  | 642 | 137,456 | 1,85663 |
| 187 | 165,045 | 1,96649 | 415 | 117,436 | 1,76702 | 643 | 99,8008 | 1,67893 |
| 188 | 114,732 | 1,75413 | 416 | 134,441 | 1,84374 | 644 | 74,636  | 1,53242 |
| 189 | 68,9578 | 1,49478 | 417 | 93,8592 | 1,64686 | 645 | 86,7924 | 1,60684 |
| 190 | 86,1197 | 1,60291 | 418 | 150,508 | 1,91032 | 646 | 107,312 | 1,71766 |
| 191 | 67,997  | 1,4882  | 419 | 66,7467 | 1,47955 | 647 | 119,573 | 1,77706 |
| 192 | 150,612 | 1,91074 | 420 | 73,984  | 1,5282  | 648 | 136,654 | 1,85322 |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 193 | 97,2449 | 1,6653  | 421 | 106,826 | 1,71521 | 649 | 104,506 | 1,70342 |
| 194 | 144,292 | 1,88517 | 422 | 101,948 | 1,6902  | 650 | 114,2   | 1,75157 |
| 195 | 74,1415 | 1,52922 | 423 | 97,6112 | 1,66727 | 651 | 105,093 | 1,70642 |
| 196 | 73,5353 | 1,52528 | 424 | 147,547 | 1,89843 | 652 | 149,403 | 1,9059  |
| 197 | 150,68  | 1,91101 | 425 | 94,8993 | 1,65257 | 653 | 119,782 | 1,77804 |
| 198 | 105,374 | 1,70785 | 426 | 104,201 | 1,70185 | 654 | 67,7611 | 1,48658 |
| 199 | 88,0582 | 1,61417 | 427 | 174,569 | 2,00146 | 655 | 95,5039 | 1,65587 |
| 200 | 91,9529 | 1,63627 | 428 | 157,732 | 1,93868 | 656 | 123,08  | 1,79328 |
| 201 | 74,8654 | 1,5339  | 429 | 96,5693 | 1,66166 | 657 | 166,534 | 1,97204 |
| 202 | 90,173  | 1,62625 | 430 | 90,0473 | 1,62554 | 658 | 132,563 | 1,83561 |
| 203 | 145,827 | 1,89145 | 431 | 73,7773 | 1,52686 | 659 | 85,8709 | 1,60146 |
| 204 | 67,4948 | 1,48474 | 432 | 103,06  | 1,69597 | 660 | 154,644 | 1,92667 |
| 205 | 68,3664 | 1,49074 | 433 | 143,652 | 1,88254 | 661 | 92,6382 | 1,64009 |
| 206 | 74,0477 | 1,52861 | 434 | 120,957 | 1,7835  | 662 | 98,7053 | 1,67312 |
| 207 | 105,302 | 1,70748 | 435 | 75,2284 | 1,53623 | 663 | 140,674 | 1,87018 |
| 208 | 68,382  | 1,49085 | 436 | 74,5391 | 1,53179 | 664 | 94,935  | 1,65277 |
| 209 | 87,8208 | 1,6128  | 437 | 83,5729 | 1,58786 | 665 | 75,4961 | 1,53795 |
| 210 | 78,0348 | 1,55401 | 438 | 90,658  | 1,62899 | 666 | 215,736 | 2,13918 |
| 211 | 87,1877 | 1,60913 | 439 | 72,5664 | 1,51893 | 667 | 228,421 | 2,17793 |
| 212 | 96,5252 | 1,66142 | 440 | 90,4273 | 1,62769 | 668 | 86,4087 | 1,6046  |
| 213 | 73,2291 | 1,52328 | 441 | 100,092 | 1,68047 | 669 | 102,789 | 1,69457 |
| 214 | 65,96   | 1,47405 | 442 | 72,6965 | 1,51979 | 670 | 153,306 | 1,92141 |
| 215 | 74,2843 | 1,53014 | 443 | 115,41  | 1,75738 | 671 | 74,8331 | 1,53369 |
| 216 | 168,004 | 1,9775  | 444 | 93,4713 | 1,64471 | 672 | 72,112  | 1,51594 |
| 217 | 120,609 | 1,78189 | 445 | 100,246 | 1,68128 | 673 | 121,091 | 1,78412 |
| 218 | 91,8344 | 1,63561 | 446 | 158,898 | 1,94317 | 674 | 164,853 | 1,96577 |
| 219 | 100,951 | 1,68499 | 447 | 95,6877 | 1,65687 | 675 | 110,111 | 1,73161 |
| 220 | 95,742  | 1,65717 | 448 | 103,466 | 1,69807 | 676 | 72,361  | 1,51758 |
| 221 | 97,7116 | 1,66781 | 449 | 100,395 | 1,68207 | 677 | 76,8183 | 1,54636 |
| 222 | 94,0615 | 1,64797 | 450 | 141,353 | 1,87301 | 678 | 66,3524 | 1,4768  |
| 223 | 170,474 | 1,98659 | 451 | 70,702  | 1,50656 | 679 | 219,877 | 2,152   |
| 224 | 96,686  | 1,66229 | 452 | 119,545 | 1,77693 | 680 | 93,7239 | 1,64611 |
| 225 | 158,388 | 1,9412  | 453 | 112,781 | 1,7447  | 681 | 216,328 | 2,14102 |
| 226 | 132,221 | 1,83411 | 454 | 116,391 | 1,76207 | 682 | 145,833 | 1,89147 |
| 227 | 112,102 | 1,7414  | 455 | 226,389 | 2,17183 | 683 | 174,408 | 2,00088 |
| 228 | 253,497 | 2,25041 | 456 | 104,302 | 1,70237 | 684 | 140,675 | 1,87019 |

### **JANUARY 2020 Analysis Information**

|                              |                                                                                |
|------------------------------|--------------------------------------------------------------------------------|
| Species                      | T. Thynnus fattened (Tzoumas 2009)                                             |
| Site                         |                                                                                |
| Cage                         |                                                                                |
| Recording date               | 02.01.2020 09:55                                                               |
| Comments                     |                                                                                |
| Project folder               | C:\Documents and Settings\Administrator\Desktop\ICCAT\02.01.2020 ICCAT PROJECT |
| Datafile folder              | C:\AM100\02.ocak.2020 iccat proje gerence 6                                    |
| Calibration filename left    | 20120424_151827_00111CF020A8_Left.Cam                                          |
| Calibration filename right   | 20120424_151827_00111CF020A3_Right.Cam                                         |
| Program version              | 1.1.1.12713                                                                    |
| Computer name                | AM100TOUGHBOOK                                                                 |
|                              |                                                                                |
| Mean weight (kg)             | 118,605                                                                        |
| Minimum weight (kg)          | 64,7705                                                                        |
| Maximum weight (kg)          | 392,392                                                                        |
| Weight S.D. (kg)             | 50,1031                                                                        |
| Weight CV (%)                | 42,2436                                                                        |
| Sample size (weight)         | 684                                                                            |
| Samples out of formula range | 0                                                                              |
| Mean FL (m)                  | 1,743                                                                          |
| Minimum FL (m)               | 1,46564                                                                        |
| Maximum FL (m)               | 2,58162                                                                        |
| FL S.D. (m)                  | 0,215404                                                                       |
| FL CV (%)                    | 12,3582                                                                        |
| Sample size (FL)             | 684                                                                            |
| Positive Count               | 0                                                                              |
| Negative Count               | 0                                                                              |
| Total Count                  | 0                                                                              |

In **Table 11** raw data of the study performed in 2 January 2020 are given.

**Table 11. Lengths and weights of BFT (JANUARY 2020 Analysis)( Raw Data)**

| ID | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  | ID  | Weight (kg) | FL (m)  |
|----|-------------|---------|-----|-------------|---------|-----|-------------|---------|
| 1  | 155,723     | 1,93088 | 229 | 238,136     | 2,20663 | 457 | 66,1486     | 1,47537 |
| 2  | 136,792     | 1,85381 | 230 | 270,533     | 2,29688 | 458 | 149,278     | 1,9054  |
| 3  | 142,63      | 1,87832 | 231 | 302,127     | 2,37801 | 459 | 74,9943     | 1,53473 |
| 4  | 102,829     | 1,69478 | 232 | 214,504     | 2,13533 | 460 | 97,9704     | 1,66919 |
| 5  | 118,442     | 1,77176 | 233 | 234,811     | 2,1969  | 461 | 97,4281     | 1,66628 |
| 6  | 74,7609     | 1,53322 | 234 | 392,392     | 2,58162 | 462 | 147,716     | 1,89911 |
| 7  | 74,3246     | 1,53041 | 235 | 266,592     | 2,28631 | 463 | 108,311     | 1,72267 |
| 8  | 91,5257     | 1,63388 | 236 | 232,591     | 2,19035 | 464 | 92,6504     | 1,64016 |
| 9  | 76,8735     | 1,54671 | 237 | 220,44      | 2,15373 | 465 | 150,57      | 1,91057 |
| 10 | 87,7545     | 1,61241 | 238 | 217,296     | 2,14403 | 466 | 72,8038     | 1,52049 |
| 11 | 75,0764     | 1,53525 | 239 | 154,935     | 1,92781 | 467 | 76,0416     | 1,54143 |
| 12 | 160,019     | 1,94747 | 240 | 230,231     | 2,18334 | 468 | 96,6976     | 1,66235 |
| 13 | 139,542     | 1,86544 | 241 | 257,301     | 2,26097 | 469 | 135,524     | 1,84839 |
| 14 | 71,2505     | 1,51022 | 242 | 218,161     | 2,1467  | 470 | 65,846      | 1,47325 |
| 15 | 88,9906     | 1,61952 | 243 | 182,605     | 2,02997 | 471 | 68,7872     | 1,49362 |
| 16 | 94,6939     | 1,65145 | 244 | 167,143     | 1,97431 | 472 | 147,682     | 1,89898 |
| 17 | 99,7791     | 1,67882 | 245 | 256,97      | 2,26005 | 473 | 92,8867     | 1,64147 |
| 18 | 214,156     | 2,13424 | 246 | 220,692     | 2,1545  | 474 | 124,179     | 1,7983  |
| 19 | 87,534      | 1,61114 | 247 | 232,226     | 2,18927 | 475 | 117,383     | 1,76677 |
| 20 | 70,677      | 1,50639 | 248 | 185,672     | 2,04063 | 476 | 104,135     | 1,70151 |
| 21 | 147,125     | 1,89672 | 249 | 219,624     | 2,15122 | 477 | 111,225     | 1,7371  |
| 22 | 100,489     | 1,68256 | 250 | 186,061     | 2,04197 | 478 | 113,454     | 1,74797 |
| 23 | 67,8387     | 1,48711 | 251 | 314,843     | 2,40902 | 479 | 149,32      | 1,90557 |
| 24 | 121,424     | 1,78566 | 252 | 218,378     | 2,14737 | 480 | 96,2811     | 1,66009 |
| 25 | 110,365     | 1,73287 | 253 | 221,232     | 2,15615 | 481 | 103,219     | 1,6968  |
| 26 | 70,2426     | 1,50348 | 254 | 132,888     | 1,83702 | 482 | 108,009     | 1,72116 |
| 27 | 72,4676     | 1,51828 | 255 | 233,634     | 2,19343 | 483 | 129,262     | 1,82111 |
| 28 | 216,96      | 2,14298 | 256 | 170,641     | 1,9872  | 484 | 120,631     | 1,78199 |
| 29 | 67,1806     | 1,48256 | 257 | 225,7       | 2,16975 | 485 | 149,164     | 1,90494 |
| 30 | 73,8849     | 1,52755 | 258 | 257,816     | 2,26239 | 486 | 165,102     | 1,9667  |
| 31 | 275,801     | 2,31084 | 259 | 222,546     | 2,16017 | 487 | 162,263     | 1,95601 |

|    |         |         |     |         |         |     |         |         |
|----|---------|---------|-----|---------|---------|-----|---------|---------|
| 32 | 216,06  | 2,14019 | 260 | 211,836 | 2,12695 | 488 | 74,0797 | 1,52882 |
| 33 | 115,082 | 1,75581 | 261 | 151,09  | 1,91264 | 489 | 140,98  | 1,87146 |
| 34 | 106,198 | 1,71203 | 262 | 115,907 | 1,75976 | 490 | 75,6822 | 1,53914 |
| 35 | 108,183 | 1,72203 | 263 | 73,5578 | 1,52543 | 491 | 73,0107 | 1,52185 |
| 36 | 87,2146 | 1,60929 | 264 | 146,331 | 1,8935  | 492 | 88,0109 | 1,61389 |
| 37 | 162,075 | 1,9553  | 265 | 90,2446 | 1,62666 | 493 | 99,3295 | 1,67644 |
| 38 | 122,606 | 1,79111 | 266 | 70,6585 | 1,50627 | 494 | 90,3408 | 1,6272  |
| 39 | 142,149 | 1,87632 | 267 | 100,352 | 1,68184 | 495 | 113,619 | 1,74877 |
| 40 | 73,2411 | 1,52336 | 268 | 121,33  | 1,78523 | 496 | 102,032 | 1,69064 |
| 41 | 174,943 | 2,00281 | 269 | 243,39  | 2,22182 | 497 | 93,8416 | 1,64676 |
| 42 | 141,527 | 1,87374 | 270 | 145,951 | 1,89195 | 498 | 91,0639 | 1,63128 |
| 43 | 72,6232 | 1,51931 | 271 | 72,2668 | 1,51696 | 499 | 73,2536 | 1,52344 |
| 44 | 159,467 | 1,94535 | 272 | 188,743 | 2,05117 | 500 | 96,2205 | 1,65977 |
| 45 | 73,7365 | 1,52659 | 273 | 115,072 | 1,75576 | 501 | 139,288 | 1,86437 |
| 46 | 71,486  | 1,51179 | 274 | 104,638 | 1,70409 | 502 | 66,2041 | 1,47576 |
| 47 | 97,8049 | 1,66831 | 275 | 206,431 | 2,10974 | 503 | 68,0286 | 1,48842 |
| 48 | 90,823  | 1,62993 | 276 | 123,331 | 1,79443 | 504 | 97,755  | 1,66804 |
| 49 | 73,7975 | 1,52699 | 277 | 240,271 | 2,21283 | 505 | 66,8466 | 1,48024 |
| 50 | 71,7677 | 1,51366 | 278 | 174,871 | 2,00255 | 506 | 179,255 | 2,0182  |
| 51 | 98,5503 | 1,67229 | 279 | 237,476 | 2,2047  | 507 | 215,332 | 2,13792 |
| 52 | 147,918 | 1,89993 | 280 | 218,52  | 2,14781 | 508 | 87,3098 | 1,60984 |
| 53 | 75,4949 | 1,53794 | 281 | 213,217 | 2,1313  | 509 | 123,534 | 1,79536 |
| 54 | 122,099 | 1,78878 | 282 | 218,762 | 2,14856 | 510 | 179,575 | 2,01933 |
| 55 | 70,0611 | 1,50226 | 283 | 257,63  | 2,26187 | 511 | 115,097 | 1,75589 |
| 56 | 87,4157 | 1,61046 | 284 | 230,688 | 2,1847  | 512 | 157,741 | 1,93871 |
| 57 | 160,63  | 1,9498  | 285 | 192,716 | 2,06465 | 513 | 103,699 | 1,69927 |
| 58 | 111,649 | 1,73918 | 286 | 241,492 | 2,21636 | 514 | 248,983 | 2,23774 |
| 59 | 99,0686 | 1,67505 | 287 | 217,437 | 2,14446 | 515 | 101,917 | 1,69004 |
| 60 | 70,1247 | 1,50268 | 288 | 245,396 | 2,22755 | 516 | 90,706  | 1,62927 |
| 61 | 103,151 | 1,69644 | 289 | 214,119 | 2,13412 | 517 | 151,436 | 1,91402 |
| 62 | 162,999 | 1,95879 | 290 | 227,161 | 2,17415 | 518 | 87,5186 | 1,61105 |
| 63 | 74,1605 | 1,52934 | 291 | 218,577 | 2,14799 | 519 | 100,54  | 1,68283 |
| 64 | 89,8106 | 1,62419 | 292 | 234,526 | 2,19606 | 520 | 108,006 | 1,72114 |
| 65 | 68,9742 | 1,49489 | 293 | 259,745 | 2,26769 | 521 | 122,165 | 1,78908 |
| 66 | 66,7429 | 1,47952 | 294 | 226,238 | 2,17137 | 522 | 70,2649 | 1,50363 |
| 67 | 65,9896 | 1,47425 | 295 | 259,726 | 2,26764 | 523 | 123,436 | 1,79491 |
| 68 | 73,6109 | 1,52577 | 296 | 257,98  | 2,26284 | 524 | 98,3033 | 1,67097 |
| 69 | 69,8401 | 1,50076 | 297 | 169,476 | 1,98293 | 525 | 85,3955 | 1,59867 |
| 70 | 75,4158 | 1,53743 | 298 | 193,713 | 2,068   | 526 | 161,089 | 1,95155 |
| 71 | 74,4297 | 1,53109 | 299 | 66,8502 | 1,48027 | 527 | 162,362 | 1,95638 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 72  | 143,536 | 1,88206 | 300 | 119,238 | 1,7755  | 528 | 108,77  | 1,72496 |
| 73  | 68,8949 | 1,49435 | 301 | 113,428 | 1,74784 | 529 | 108,709 | 1,72466 |
| 74  | 90,6472 | 1,62893 | 302 | 123,412 | 1,7948  | 530 | 115,147 | 1,75612 |
| 75  | 66,6954 | 1,47919 | 303 | 152,448 | 1,91803 | 531 | 132,996 | 1,83749 |
| 76  | 95,9548 | 1,65832 | 304 | 110,747 | 1,73475 | 532 | 128,949 | 1,81972 |
| 77  | 146,735 | 1,89514 | 305 | 149,691 | 1,90706 | 533 | 180,761 | 2,02351 |
| 78  | 98,2561 | 1,67072 | 306 | 147,173 | 1,89692 | 534 | 105,951 | 1,71078 |
| 79  | 72,5042 | 1,51853 | 307 | 142,323 | 1,87705 | 535 | 104,876 | 1,70531 |
| 80  | 95,0968 | 1,65365 | 308 | 88,4343 | 1,61633 | 536 | 155,751 | 1,93099 |
| 81  | 73,8588 | 1,52739 | 309 | 122,247 | 1,78946 | 537 | 197,092 | 2,07927 |
| 82  | 106,168 | 1,71188 | 310 | 89,7417 | 1,6238  | 538 | 122,428 | 1,79029 |
| 83  | 89,501  | 1,62243 | 311 | 67,7747 | 1,48667 | 539 | 142,655 | 1,87842 |
| 84  | 98,8648 | 1,67397 | 312 | 169,491 | 1,98298 | 540 | 142,092 | 1,87609 |
| 85  | 70,4833 | 1,50509 | 313 | 69,1081 | 1,4958  | 541 | 80,0461 | 1,56649 |
| 86  | 106,982 | 1,716   | 314 | 149,605 | 1,90671 | 542 | 87,0105 | 1,60811 |
| 87  | 70,121  | 1,50266 | 315 | 118,029 | 1,76982 | 543 | 87,335  | 1,60999 |
| 88  | 70,4068 | 1,50458 | 316 | 70,8684 | 1,50767 | 544 | 67,0195 | 1,48145 |
| 89  | 145,355 | 1,88952 | 317 | 70,7937 | 1,50717 | 545 | 159,043 | 1,94372 |
| 90  | 120,043 | 1,77926 | 318 | 145,911 | 1,89179 | 546 | 103,419 | 1,69783 |
| 91  | 71,1965 | 1,50986 | 319 | 92,7019 | 1,64045 | 547 | 97,4228 | 1,66626 |
| 92  | 159,102 | 1,94395 | 320 | 164,548 | 1,96462 | 548 | 88,045  | 1,61409 |
| 93  | 83,633  | 1,58822 | 321 | 162,138 | 1,95554 | 549 | 90,1482 | 1,62611 |
| 94  | 69,7538 | 1,50018 | 322 | 87,0638 | 1,60842 | 550 | 75,6746 | 1,53909 |
| 95  | 68,726  | 1,4932  | 323 | 75,7785 | 1,53975 | 551 | 75,3371 | 1,53693 |
| 96  | 66,3731 | 1,47694 | 324 | 86,676  | 1,60616 | 552 | 120,787 | 1,78271 |
| 97  | 118,631 | 1,77265 | 325 | 69,3367 | 1,49736 | 553 | 89,4476 | 1,62213 |
| 98  | 187,387 | 2,04653 | 326 | 88,1929 | 1,61494 | 554 | 93,4486 | 1,64459 |
| 99  | 90,6267 | 1,62882 | 327 | 74,7111 | 1,5329  | 555 | 109,392 | 1,72806 |
| 100 | 75,3522 | 1,53702 | 328 | 71,7995 | 1,51387 | 556 | 115,373 | 1,75721 |
| 101 | 74,3681 | 1,53069 | 329 | 97,5337 | 1,66685 | 557 | 70,1046 | 1,50255 |
| 102 | 99,7611 | 1,67872 | 330 | 217,708 | 2,1453  | 558 | 110,608 | 1,73407 |
| 103 | 74,7876 | 1,5334  | 331 | 87,7034 | 1,61212 | 559 | 90,2631 | 1,62676 |
| 104 | 123,728 | 1,79624 | 332 | 83,4929 | 1,58739 | 560 | 150,515 | 1,91035 |
| 105 | 166,195 | 1,97078 | 333 | 121,021 | 1,7838  | 561 | 74,3829 | 1,53078 |
| 106 | 159,16  | 1,94417 | 334 | 164,471 | 1,96433 | 562 | 144,133 | 1,88451 |
| 107 | 93,9322 | 1,64726 | 335 | 143,105 | 1,88028 | 563 | 104,964 | 1,70576 |
| 108 | 75,1232 | 1,53555 | 336 | 117,14  | 1,76562 | 564 | 104,709 | 1,70445 |
| 109 | 216,979 | 2,14304 | 337 | 182,329 | 2,02901 | 565 | 106,903 | 1,7156  |
| 110 | 75,0519 | 1,5351  | 338 | 65,8206 | 1,47307 | 566 | 145,946 | 1,89193 |
| 111 | 64,7705 | 1,46564 | 339 | 73,5429 | 1,52533 | 567 | 95,4569 | 1,65562 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 112 | 123,871 | 1,7969  | 340 | 148,929 | 1,904   | 568 | 96,2819 | 1,6601  |
| 113 | 143,692 | 1,8827  | 341 | 121,681 | 1,78685 | 569 | 100,319 | 1,68167 |
| 114 | 73,5665 | 1,52548 | 342 | 98,1966 | 1,6704  | 570 | 131,36  | 1,83035 |
| 115 | 64,9456 | 1,46688 | 343 | 67,0223 | 1,48147 | 571 | 166,711 | 1,9727  |
| 116 | 121,671 | 1,78681 | 344 | 92,2948 | 1,63818 | 572 | 70,7383 | 1,5068  |
| 117 | 144,986 | 1,88802 | 345 | 65,2854 | 1,46929 | 573 | 76,0455 | 1,54145 |
| 118 | 122,479 | 1,79053 | 346 | 117,995 | 1,76966 | 574 | 158,16  | 1,94033 |
| 119 | 149,104 | 1,90471 | 347 | 74,4146 | 1,53099 | 575 | 94,4462 | 1,65009 |
| 120 | 69,2165 | 1,49654 | 348 | 122,756 | 1,7918  | 576 | 90,2413 | 1,62664 |
| 121 | 75,5402 | 1,53823 | 349 | 74,5368 | 1,53178 | 577 | 93,2109 | 1,64327 |
| 122 | 73,5446 | 1,52534 | 350 | 166,376 | 1,97146 | 578 | 149,857 | 1,90772 |
| 123 | 87,1503 | 1,60892 | 351 | 85,5009 | 1,59929 | 579 | 150,83  | 1,91161 |
| 124 | 156,925 | 1,93555 | 352 | 153,382 | 1,92171 | 580 | 91,1953 | 1,63202 |
| 125 | 120,13  | 1,77966 | 353 | 102,371 | 1,6924  | 581 | 112,295 | 1,74234 |
| 126 | 69,0305 | 1,49528 | 354 | 122,539 | 1,7908  | 582 | 78,3835 | 1,55619 |
| 127 | 146,092 | 1,89253 | 355 | 102,521 | 1,69318 | 583 | 120,169 | 1,77984 |
| 128 | 122,715 | 1,79161 | 356 | 98,1416 | 1,67011 | 584 | 66,2811 | 1,4763  |
| 129 | 123,01  | 1,79296 | 357 | 85,7929 | 1,601   | 585 | 90,5582 | 1,62843 |
| 130 | 65,5933 | 1,47147 | 358 | 122,405 | 1,79018 | 586 | 149,442 | 1,90606 |
| 131 | 64,892  | 1,4665  | 359 | 182,049 | 2,02803 | 587 | 89,1492 | 1,62042 |
| 132 | 97,684  | 1,66766 | 360 | 218,597 | 2,14805 | 588 | 163,395 | 1,96028 |
| 133 | 65,6    | 1,47151 | 361 | 142,473 | 1,87767 | 589 | 87,8786 | 1,61313 |
| 134 | 120,175 | 1,77987 | 362 | 138,918 | 1,86281 | 590 | 150,624 | 1,91079 |
| 135 | 67,3262 | 1,48357 | 363 | 242,677 | 2,21977 | 591 | 92,2605 | 1,63799 |
| 136 | 113,186 | 1,74667 | 364 | 82,0329 | 1,57861 | 592 | 88,2799 | 1,61544 |
| 137 | 65,2646 | 1,46914 | 365 | 139,451 | 1,86506 | 593 | 75,5507 | 1,5383  |
| 138 | 65,1077 | 1,46803 | 366 | 192,447 | 2,06374 | 594 | 165,215 | 1,96712 |
| 139 | 66,0077 | 1,47438 | 367 | 234,908 | 2,19719 | 595 | 67,3837 | 1,48397 |
| 140 | 66,9028 | 1,48064 | 368 | 81,8948 | 1,57777 | 596 | 76,1018 | 1,54181 |
| 141 | 66,0361 | 1,47458 | 369 | 118,786 | 1,77338 | 597 | 80,1323 | 1,56702 |
| 142 | 85,0437 | 1,59659 | 370 | 72,6572 | 1,51953 | 598 | 75,1677 | 1,53584 |
| 143 | 77,0342 | 1,54772 | 371 | 162,963 | 1,95866 | 599 | 120,977 | 1,7836  |
| 144 | 98,5431 | 1,67225 | 372 | 155,98  | 1,93188 | 600 | 120,598 | 1,78184 |
| 145 | 144,346 | 1,88539 | 373 | 67,7352 | 1,4864  | 601 | 131,654 | 1,83164 |
| 146 | 67,8314 | 1,48706 | 374 | 156,283 | 1,93306 | 602 | 70,4231 | 1,50469 |
| 147 | 66,1066 | 1,47508 | 375 | 123,568 | 1,79551 | 603 | 143,609 | 1,88236 |
| 148 | 67,8068 | 1,48689 | 376 | 69,3138 | 1,4972  | 604 | 91,0555 | 1,63124 |
| 149 | 75,7886 | 1,53982 | 377 | 164,247 | 1,96349 | 605 | 148,804 | 1,9035  |
| 150 | 164,881 | 1,96587 | 378 | 91,8968 | 1,63596 | 606 | 100,496 | 1,6826  |
| 151 | 66,4129 | 1,47722 | 379 | 69,6245 | 1,49931 | 607 | 145,222 | 1,88898 |

|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 152 | 70,2929 | 1,50382 | 380 | 73,0903 | 1,52237 | 608 | 129,569 | 1,82247 |
| 153 | 70,4326 | 1,50475 | 381 | 136,483 | 1,85249 | 609 | 136,698 | 1,85341 |
| 154 | 65,379  | 1,46995 | 382 | 118,537 | 1,77221 | 610 | 71,6097 | 1,51261 |
| 155 | 67,264  | 1,48314 | 383 | 66,1605 | 1,47545 | 611 | 85,6525 | 1,60018 |
| 156 | 65,3797 | 1,46996 | 384 | 90,473  | 1,62795 | 612 | 129,365 | 1,82157 |
| 157 | 128,157 | 1,81621 | 385 | 154,516 | 1,92617 | 613 | 87,6472 | 1,6118  |
| 158 | 94,5609 | 1,65072 | 386 | 143,958 | 1,8838  | 614 | 92,7898 | 1,64094 |
| 159 | 66,9281 | 1,48081 | 387 | 65,561  | 1,47124 | 615 | 140,599 | 1,86987 |
| 160 | 74,4858 | 1,53145 | 388 | 75,0142 | 1,53485 | 616 | 91,9662 | 1,63635 |
| 161 | 123,206 | 1,79386 | 389 | 101,296 | 1,6868  | 617 | 163,46  | 1,96053 |
| 162 | 123,43  | 1,79488 | 390 | 65,5752 | 1,47134 | 618 | 90,8988 | 1,63035 |
| 163 | 77,1178 | 1,54825 | 391 | 87,543  | 1,61119 | 619 | 142,28  | 1,87687 |
| 164 | 67,3138 | 1,48349 | 392 | 86,9662 | 1,60785 | 620 | 126,988 | 1,81098 |
| 165 | 85,9569 | 1,60196 | 393 | 99,1554 | 1,67551 | 621 | 97,6737 | 1,6676  |
| 166 | 124,099 | 1,79793 | 394 | 178,582 | 2,01581 | 622 | 158,64  | 1,94218 |
| 167 | 69,5073 | 1,49851 | 395 | 150,066 | 1,90856 | 623 | 64,7711 | 1,46564 |
| 168 | 86,8881 | 1,6074  | 396 | 75,903  | 1,54055 | 624 | 102,469 | 1,69291 |
| 169 | 65,2187 | 1,46882 | 397 | 221,555 | 2,15714 | 625 | 66,8583 | 1,48033 |
| 170 | 65,2294 | 1,4689  | 398 | 138,302 | 1,86021 | 626 | 66,0271 | 1,47452 |
| 171 | 71,4265 | 1,5114  | 399 | 97,9665 | 1,66917 | 627 | 119,757 | 1,77792 |
| 172 | 72,6018 | 1,51917 | 400 | 95,2208 | 1,65433 | 628 | 114,072 | 1,75096 |
| 173 | 120,806 | 1,7828  | 401 | 118,717 | 1,77306 | 629 | 140,802 | 1,87072 |
| 174 | 65,9584 | 1,47404 | 402 | 166,053 | 1,97025 | 630 | 124,764 | 1,80096 |
| 175 | 98,9801 | 1,67458 | 403 | 66,8205 | 1,48006 | 631 | 70,8722 | 1,5077  |
| 176 | 70,1737 | 1,50301 | 404 | 73,6556 | 1,52606 | 632 | 132,261 | 1,83429 |
| 177 | 145,366 | 1,88957 | 405 | 74,0352 | 1,52853 | 633 | 130,888 | 1,82828 |
| 178 | 65,9438 | 1,47393 | 406 | 122,806 | 1,79203 | 634 | 71,1751 | 1,50972 |
| 179 | 75,044  | 1,53505 | 407 | 151,67  | 1,91495 | 635 | 85,4882 | 1,59921 |
| 180 | 71,0305 | 1,50876 | 408 | 93,4794 | 1,64476 | 636 | 67,7649 | 1,48661 |
| 181 | 69,1851 | 1,49633 | 409 | 170,396 | 1,9863  | 637 | 86,2189 | 1,60349 |
| 182 | 160,603 | 1,9497  | 410 | 79,9299 | 1,56578 | 638 | 78,6881 | 1,55809 |
| 183 | 167,459 | 1,97548 | 411 | 69,4768 | 1,49831 | 639 | 151,538 | 1,91442 |
| 184 | 67,0058 | 1,48135 | 412 | 88,9032 | 1,61902 | 640 | 147,79  | 1,89941 |
| 185 | 93,3519 | 1,64405 | 413 | 164,874 | 1,96584 | 641 | 83,5048 | 1,58746 |
| 186 | 91,6413 | 1,63453 | 414 | 164,755 | 1,9654  | 642 | 137,456 | 1,85663 |
| 187 | 165,045 | 1,96649 | 415 | 117,436 | 1,76702 | 643 | 99,8008 | 1,67893 |
| 188 | 114,732 | 1,75413 | 416 | 134,441 | 1,84374 | 644 | 74,636  | 1,53242 |
| 189 | 68,9578 | 1,49478 | 417 | 93,8592 | 1,64686 | 645 | 86,7924 | 1,60684 |
| 190 | 86,1197 | 1,60291 | 418 | 150,508 | 1,91032 | 646 | 107,312 | 1,71766 |
| 191 | 67,997  | 1,4882  | 419 | 66,7467 | 1,47955 | 647 | 119,573 | 1,77706 |



|     |         |         |     |         |         |     |         |         |
|-----|---------|---------|-----|---------|---------|-----|---------|---------|
| 192 | 150,612 | 1,91074 | 420 | 73,984  | 1,5282  | 648 | 136,654 | 1,85322 |
| 193 | 97,2449 | 1,6653  | 421 | 106,826 | 1,71521 | 649 | 104,506 | 1,70342 |
| 194 | 144,292 | 1,88517 | 422 | 101,948 | 1,6902  | 650 | 114,2   | 1,75157 |
| 195 | 74,1415 | 1,52922 | 423 | 97,6112 | 1,66727 | 651 | 105,093 | 1,70642 |
| 196 | 73,5353 | 1,52528 | 424 | 147,547 | 1,89843 | 652 | 149,403 | 1,9059  |
| 197 | 150,68  | 1,91101 | 425 | 94,8993 | 1,65257 | 653 | 119,782 | 1,77804 |
| 198 | 105,374 | 1,70785 | 426 | 104,201 | 1,70185 | 654 | 67,7611 | 1,48658 |
| 199 | 88,0582 | 1,61417 | 427 | 174,569 | 2,00146 | 655 | 95,5039 | 1,65587 |
| 200 | 91,9529 | 1,63627 | 428 | 157,732 | 1,93868 | 656 | 123,08  | 1,79328 |
| 201 | 74,8654 | 1,5339  | 429 | 96,5693 | 1,66166 | 657 | 166,534 | 1,97204 |
| 202 | 90,173  | 1,62625 | 430 | 90,0473 | 1,62554 | 658 | 132,563 | 1,83561 |
| 203 | 145,827 | 1,89145 | 431 | 73,7773 | 1,52686 | 659 | 85,8709 | 1,60146 |
| 204 | 67,4948 | 1,48474 | 432 | 103,06  | 1,69597 | 660 | 154,644 | 1,92667 |
| 205 | 68,3664 | 1,49074 | 433 | 143,652 | 1,88254 | 661 | 92,6382 | 1,64009 |
| 206 | 74,0477 | 1,52861 | 434 | 120,957 | 1,7835  | 662 | 98,7053 | 1,67312 |
| 207 | 105,302 | 1,70748 | 435 | 75,2284 | 1,53623 | 663 | 140,674 | 1,87018 |
| 208 | 68,382  | 1,49085 | 436 | 74,5391 | 1,53179 | 664 | 94,935  | 1,65277 |
| 209 | 87,8208 | 1,6128  | 437 | 83,5729 | 1,58786 | 665 | 75,4961 | 1,53795 |
| 210 | 78,0348 | 1,55401 | 438 | 90,658  | 1,62899 | 666 | 215,736 | 2,13918 |
| 211 | 87,1877 | 1,60913 | 439 | 72,5664 | 1,51893 | 667 | 228,421 | 2,17793 |
| 212 | 96,5252 | 1,66142 | 440 | 90,4273 | 1,62769 | 668 | 86,4087 | 1,6046  |
| 213 | 73,2291 | 1,52328 | 441 | 100,092 | 1,68047 | 669 | 102,789 | 1,69457 |
| 214 | 65,96   | 1,47405 | 442 | 72,6965 | 1,51979 | 670 | 153,306 | 1,92141 |
| 215 | 74,2843 | 1,53014 | 443 | 115,41  | 1,75738 | 671 | 74,8331 | 1,53369 |
| 216 | 168,004 | 1,9775  | 444 | 93,4713 | 1,64471 | 672 | 72,112  | 1,51594 |
| 217 | 120,609 | 1,78189 | 445 | 100,246 | 1,68128 | 673 | 121,091 | 1,78412 |
| 218 | 91,8344 | 1,63561 | 446 | 158,898 | 1,94317 | 674 | 164,853 | 1,96577 |
| 219 | 100,951 | 1,68499 | 447 | 95,6877 | 1,65687 | 675 | 110,111 | 1,73161 |
| 220 | 95,742  | 1,65717 | 448 | 103,466 | 1,69807 | 676 | 72,361  | 1,51758 |
| 221 | 97,7116 | 1,66781 | 449 | 100,395 | 1,68207 | 677 | 76,8183 | 1,54636 |
| 222 | 94,0615 | 1,64797 | 450 | 141,353 | 1,87301 | 678 | 66,3524 | 1,4768  |
| 223 | 170,474 | 1,98659 | 451 | 70,702  | 1,50656 | 679 | 219,877 | 2,152   |
| 224 | 96,686  | 1,66229 | 452 | 119,545 | 1,77693 | 680 | 93,7239 | 1,64611 |
| 225 | 158,388 | 1,9412  | 453 | 112,781 | 1,7447  | 681 | 216,328 | 2,14102 |
| 226 | 132,221 | 1,83411 | 454 | 116,391 | 1,76207 | 682 | 145,833 | 1,89147 |
| 227 | 112,102 | 1,7414  | 455 | 226,389 | 2,17183 | 683 | 174,408 | 2,00088 |
| 228 | 253,497 | 2,25041 | 456 | 104,302 | 1,70237 | 684 | 140,675 | 1,87019 |



## Photos From Project



**Taking of underwater video by stereoscopic camera**



**Feeding BFT cages (LBY AKU 2019 001)**



**Measurements in BFT cages (LBY AKU 2019 001)**