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# LENGTH-WEIGHT TABLES OF SOME FISH SPECIES FROM NORTHEASTERN BRAZIL

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Data on length and weight are essential for the study of the biology of any fish, the first one being more rapidly and accurately measured than the second.

In order to estimate the weight of the fish landed at the beaches along the coast of Ceará (Brazil), the preparation of length-weight tables of those fish became necessary.

The samples regarding ten species of fish were taken at the beaches. The fork length of each fish was recorded in millimeters, and later on grouped in classes of half centimeter interval, such as 8.0 — 8.4 cm considered as 8.0 cm, as was done in an author's former paper (Nomura, 1962). The weight was recorded to tenth of a gram. Variations due to sex and season were not taken on account.

The equation that represents the length-weight relationship is:

$$W = a\ L^b$$

where: W = weight in grams; L = length in centimeters; $a$ = a constant, and $b$ = an exponent, generally lying between 2.5 and 4.0 cm (Hile, 1936; Martin, 1949). The parameters $a$ and $b$ were calculated through a regression fitted by least squares of the logarithmic transformation:

$$\log W = \log a + b \log L$$

## RESULTS

The parameters $a$ and $b$ of the fish species analysed are in table I.

The weight values for each length are shown in tables II and III.

## RESUMO

A fim de facilitar o trabalho de avaliação do pêso total de algumas espécies ictiológicas desembarcadas nas praias do Estado do Ceará (Brasil), sem efetuar operações de pesagem, mas sòmente medições de comprimento zoológico (fork length), foram calculados os valores

TABLE I

Parameters $a$ and $b$ of ten fish species from northeastern Brazil

| Common names | | Scientific names | Parameters | |
|---|---|---|---|---|
| Portuguese | English | | $a$ | $b$ |
| Agulha | Halfbeak | *Hemirhamphus brasiliensis* (Linnaeus) | 0.00257 | 3.333 |
| Ariacó | Lane snapper | *Lutianus synagris* (Linnaeus) | 0.0427 | 2.717 |
| Biquara | White grunt | *Haemulon plumieri* (Lacépède) | 0.0329 | 2.862 |
| Guaiúba | Yellowtail snapper | *Ocyurus chrysurus* (Bloch) | 0.0215 | 2.921 |
| Lancêta | Lancet fish | *Acanthurus hepatus* (Linnaeus) | 0.0184 | 3.123 |
| Macasso | Grunt | *Haemulon steindachneri* (Jordan & Gilbert) | 0.00186 | 3.833 |
| Mariquita | Squirrel fish | *Holocentrus ascensionis* (Osbeck) | 0.0126 | 3.167 |
| Sapuruna-de-lista | French margate fish | *Haemulon melanurum* (Linnaeus) | 0.0101 | 3.273 |
| Tainha | White mullet | *Mugil curema* Cuvier & Valenciennes | 0.0233 | 2.806 |
| Xira | Tomtate | *Haemulon aurolineatum* Cuvier | 0.0143 | 3.143 |

dos parâmetros *a* e *b* (característicos para cada espécie) da equação: $W = a L^b$ (onde W = pêso em gramas; L = comprimento zoológico em centímetros), através da reta de regressão dos valores logarítmicos: log W = log a + b log L, para as espécies discriminadas na tabela I. As tabelas II e III mostram os comprimentos zoológicos agrupados em classes de 0,5 cm e seus respectivos pesos calculados.

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## TABLE II

Length-weight table of some fish species from northeastern Brazil

| Fork length (cm) | Agulha (g) | Biquara (g) | Guaiúba (g) | Lancêta (g) | Macasso (g) | Mariquita (g) | Sapuruna-de-lista (g) | Xira (g) |
|---|---|---|---|---|---|---|---|---|
| 5.0 | 0.6 | 3.3 | 2.4 | 2.8 | 0.9 | 2.1 | 2.0 | 2.2 |
| 5.5 | 0.8 | 4.3 | 3.1 | 3.8 | 1.3 | 2.8 | 2.7 | 3.0 |
| 6.0 | 1.0 | 5.5 | 4.0 | 5.0 | 1.8 | 3.7 | 3.6 | 4.0 |
| 6.5 | 1.3 | 7.0 | 5.1 | 6.4 | 2.4 | 4.7 | 4.6 | 5.1 |
| 7.0 | 1.7 | 8.6 | 6.3 | 8.0 | 3.2 | 6.0 | 5.9 | 6.5 |
| 7.5 | 2.1 | 10.5 | 7.7 | 10.0 | 4.2 | 7.4 | 7.4 | 8.0 |
| 8.0 | 2.6 | 12.6 | 9.4 | 12.2 | 5.4 | 9.1 | 9.1 | 9.8 |
| 8.5 | 3.2 | 15.0 | 11.2 | 14.7 | 6.8 | 11.4 | 11.1 | 11.9 |
| 9.0 | 3.9 | 17.7 | 13.2 | 17.5 | 8.5 | 13.2 | 13.4 | 14.2 |
| 9.5 | 4.7 | 20.7 | 15.5 | 20.9 | 10.5 | 15.8 | 16.1 | 16.9 |
| 10.0 | 5.5 | 23.9 | 18.0 | 24.4 | 12.7 | 18.5 | 19.0 | 19.8 |
| 10.5 | 6.5 | 27.5 | 20.7 | 28.4 | 15.2 | 21.6 | 22.2 | 23.1 |
| 11.0 | 7.6 | 31.3 | 23.7 | 32.8 | 18.2 | 25.0 | 25.8 | 26.7 |
| 11.5 | 8.8 | 35.6 | 26.9 | 37.6 | 21.5 | 28.7 | 29.8 | 30.6 |
| 12.0 | 10.1 | 40.3 | 30.6 | 43.2 | 25.6 | 33.0 | 34.4 | 35.1 |
| 12.5 | 11.6 | 45.4 | 34.4 | 49.0 | 29.9 | 37.6 | 39.4 | 40.0 |
| 13.0 | 13.2 | 50.7 | 38.6 | 55.5 | 34.7 | 42.6 | 44.8 | 45.2 |
| 13.5 | 15.0 | 56.4 | 43.1 | 62.2 | 39.9 | 47.9 | 50.5 | 50.7 |
| 14.0 | 17.0 | 62.7 | 47.9 | 69.8 | 46.0 | 53.7 | 57.0 | 57.0 |
| 14.5 | 19.0 | 69.2 | 53.0 | 77.8 | 52.5 | 60.0 | 63.8 | 63.5 |
| 15.0 | 21.4 | 76.4 | 58.6 | 86.7 | 60.0 | 66.8 | 71.5 | 70.8 |
| 15.5 | 23.8 | 83.8 | 64.4 | 95.7 | 67.8 | 74.1 | 79.4 | 78.3 |
| 16.0 | 26.5 | 91.8 | 70.8 | 105.9 | 76.7 | 82.0 | 88.3 | 86.7 |
| 16.5 | 29.3 | 100.0 | 77.3 | 116.2 | 86.1 | 90.2 | 97.3 | 95.3 |
| 17.0 | 32.4 | 108.9 | 84.3 | 127.6 | 96.6 | 99.1 | 108.0 | 104.8 |
| 17.5 | 35.7 | 118.6 | 92.0 | 140.3 | 108.2 | 109.2 | 118.3 | 115.1 |
| 18.0 | 39.2 | 128.6 | 99.8 | 152.8 | 120.3 | 119.2 | 129.7 | 125.3 |
| 18.5 | 43.0 | 139.0 | 108.2 | 166.7 | 133.7 | 130.1 | 142.0 | 136.8 |
| 19.0 | 47.1 | 150.3 | 117.3 | 181.6 | 148.6 | 141.9 | 155.3 | 149.3 |
| 19.5 | 51.3 | 161.8 | 126.2 | 196.8 | 164.1 | 153.5 | 168.7 | 161.4 |
| 20.0 | 55.7 | 173.8 | 135.9 | 212.8 | 180.7 | 166.4 | 183.3 | 175.0 |
| 20.5 | 60.7 | 187.1 | 146.3 | 230.2 | 199.1 | 180.3 | 199.1 | 189.7 |
| 21.0 | 65.5 | 199.6 | 156.7 | 247.7 | 217.3 | 194.1 | 214.8 | 203.7 |
| 21.5 | 70.8 | 213.3 | 167.5 | 266.1 | 237.7 | 208.5 | 231.8 | 218.8 |
| 22.0 | 76.4 | 228.1 | 179.1 | 285.8 | 259.4 | 224.4 | 249.5 | 235.5 |
| 22.5 | 82.4 | 243.2 | 191.5 | 306.9 | 283.1 | 241.6 | 269.2 | 253.0 |
| 23.0 | 89.1 | 260.0 | 204.7 | 330.4 | 309.7 | 259.4 | 290.4 | 272.3 |
| 23.5 | 95.5 | 276.1 | 217.8 | 352.4 | 335.0 | 277.4 | 310.5 | 290.4 |
| 24.0 | 102.4 | 293.1 | 231.2 | 375.8 | 363.1 | 295.8 | 332.7 | 309.8 |
| 24.5 | 108.2 | 310.5 | 245.5 | 400.9 | 392.6 | 316.2 | 355.7 | 331.2 |
| 25.0 | 117.7 | 329.6 | 261.2 | 427.6 | 425.6 | 337.3 | 381.1 | 353.2 |
| 25.5 | 125.9 | 350.0 | 277.3 | 456.0 | 460.3 | 360.6 | 407.4 | 376.7 |
| 26.0 | 133.7 | 369.0 | 292.4 | 483.1 | 494.3 | 382.0 | 432.5 | 399.1 |
| 26.5 | 142.3 | 389.1 | 309.1 | 511.7 | 529.7 | 405.6 | 459.2 | 422.7 |
| 27.0 | 152.4 | 410.2 | 325.9 | 542.0 | 568.9 | 429.6 | 488.7 | 448.8 |
| 27.5 | 160.7 | 431.5 | 343.6 | 574.1 | 611.0 | 455.0 | 518.7 | 475.4 |
| 28.0 | 171.0 | 455.0 | 363.1 | 608.1 | 654.7 | 483.1 | 550.9 | 503.5 |
| 28.5 | 182.0 | 479.7 | 382.9 | 644.2 | 703.1 | 511.7 | 584.8 | 533.4 |
| 29.0 | 191.9 | 502.3 | 401.8 | 677.7 | 748.2 | 538.3 | 616.6 | 561.1 |
| 29.5 | 204.2 | 529.7 | 423.7 | 717.8 | 803.5 | 570.2 | 654.7 | 594.3 |
| 30.0 | 215.3 | 554.6 | 443.6 | 755.1 | 853.1 | 601.2 | 690.3 | 625.2 |

TABLE III

Length-weight table of some fish species from northeastern Brazil

| Fork length (cm) | Ariacó (g) | Tainha (g) | Fork length (cm) | Ariacó (g) | Tainha (g) |
|---|---|---|---|---|---|
| 5.0 | 3.4 | 2.1 | | | |
| 5.5 | 4.4 | 2.8 | 25.5 | 284.5 | 206.6 |
| 6.0 | 5.6 | 3.6 | 26.0 | 299.3 | 217.3 |
| 6.5 | 6.9 | 4.4 | 26.5 | 314.1 | 229.1 |
| 7.0 | 8.5 | 5.5 | 27.0 | 330.4 | 241.0 |
| 7.5 | 10.2 | 6.6 | 27.5 | 347.6 | 254.1 |
| 8.0 | 12.1 | 8.0 | 28.0 | 364.8 | 267.3 |
| 8.5 | 14.3 | 9.4 | 28.5 | 383.7 | 281.9 |
| 9.0 | 16.7 | 11.1 | 29.0 | 400.9 | 294.5 |
| 9.5 | 19.4 | 12.9 | 29.5 | 421.7 | 310.5 |
| 10.0 | 22.3 | 14.9 | 30.0 | 440.6 | 324.4 |
| 10.5 | 25.4 | 17.1 | 30.5 | 460.3 | 339.7 |
| 11.0 | 28.8 | 19.4 | 31.0 | 480.9 | 355.6 |
| 11.5 | 32.4 | 21.9 | 31.5 | 502.4 | 371.6 |
| 12.0 | 36.6 | 24.8 | 32.0 | 524.8 | 389.1 |
| 12.5 | 40.9 | 27.9 | 32.5 | 548.3 | 407.4 |
| 13.0 | 45.5 | 31.1 | 33.0 | 572.8 | 425.6 |
| 13.5 | 50.2 | 34.5 | 33.5 | 594.3 | 442.6 |
| 14.0 | 55.6 | 38.3 | 34.0 | 618.0 | 460.3 |
| 14.5 | 61.0 | 42.2 | 34.5 | 645.7 | 482.0 |
| 15.0 | 67.0 | 46.5 | 35.0 | 669.9 | 500.0 |
| 15.5 | 73.1 | 50.8 | 35.5 | 695.6 | 520.0 |
| 16.0 | 79.8 | 55.6 | 36.0 | 722.8 | 540.8 |
| 16.5 | 86.7 | 60.5 | 36.5 | 749.9 | 562.4 |
| 17.0 | 94.0 | 65.8 | 37.0 | 778.0 | 584.8 |
| 17.5 | 101.9 | 71.6 | 37.5 | 809.1 | 608.1 |
| 18.0 | 109.9 | 77.5 | 38.0 | 839.5 | 631.0 |
| 18.5 | 118.3 | 83.6 | 38.5 | 865.0 | 653.1 |
| 19.0 | 127.7 | 90.4 | 39.0 | 899.5 | 677.6 |
| 19.5 | 136.8 | 97.0 | 39.5 | 933.3 | 704.7 |
| 20.0 | 146.6 | 104.3 | 40.0 | 963.8 | 727.8 |
| 20.5 | 157.1 | 111.7 | 40.5 | 993.1 | 751.6 |
| 21.0 | 167.1 | 119.4 | 41.0 | 1,033.0 | 781.6 |
| 21.5 | 177.9 | 127.4 | 41.5 | 1,064.0 | 807.2 |
| 22.0 | 189.3 | 135.9 | 42.0 | 1,099.0 | 833.7 |
| 22.5 | 201.4 | 144.9 | 42.5 | 1,133.0 | 861.0 |
| 23.0 | 214.8 | 154.6 | 43.0 | 1,170.0 | 889.2 |
| 23.5 | 227.0 | 163.7 | 43.5 | 1,206.0 | 918.4 |
| 24.0 | 239.9 | 173.4 | 44.0 | 1,245.0 | 948.4 |
| 24.5 | 254.1 | 184.1 | 44.5 | 1,286.0 | 979.5 |
| 25.0 | 268.6 | 195.0 | 45.0 | 1,325.0 | 1,012.0 |