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Weight-size characterization of *Alitta succinea* (Leuckart, 1847) distributed in the south-eastern part of the Georgian Black Sea

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Abstract

The most dominant specie in Epifauna composition in the south-eastern part of the Georgian Black Sea is Polychetae *Alitta succinea* (Leuckart, 1847). Samples were collected in three stations—Tsikhisdziri, Green Cape and Kvariati during spring and summer seasons of 2010. The aim of surveys was to identify a correlation between body size and damp weight.

Totally 111 examples were used for sampling. Their sizes varied between 4.6-13.5cm and damp weight 0.31-182.5gm. The body length as an average was 7.04 cm. The variance has been 3.45cm, standard deviation was 1.86 and coefficient of variation equaled to 26% and average point of variation;

The average indication of an arithmetical absolute uncertainty was 0.18; the average arithmetical relative uncertainty composed of 3% meaning that the precise calculation of average arithmetic was reasonable. The general average was $6.69 \leq \mu \leq 7.39$ i.e. being in interval of 6.69 and 7.39; The average damp weight of the body equaled to 0.65gm, the correlation connection between size and weight was stable and accordingly coefficient of correlation equaled to 0.76. Regressive analyze of the body size and weight showed that increasing 1cm of size provoked in average enlarging 0.25gm of weight.

Keywords: Epifauna, arithmetical uncertainty, correlation, regressive analyze

1. Introduction

Biometric study of *A. succinea* being distributed in the south-eastern part of the Georgian Black Sea coast has not been conducted so far. That's why the cornerstone of study was to identify and realize the relationship between a body size and a damp weight of *A. succinea*. Results gained from the study should develop possibility to make some statistical analyzes. Biometric data will ensure the opportunity to identify the density of population and its physiological features.

2. Materials and method

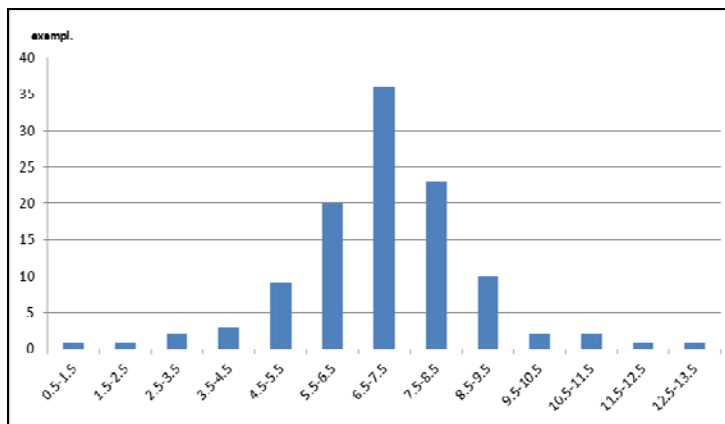
In March, May and July 2010 samples were collected in natural (Tsikhisdziri, Kvariati) and artificial (Green Cape) rocky surfaces. While samplings the specific framed net (with area of 324cm²) was used by a diver.

Sizes of species were classified with the help of ruler weighting by the direct Torsionic scale's method. Based on this method the damp weight of specie was classified. All calculations used by methodologies has been described in references 1, 2, 3.

3. Results

Statistic information contents the body length (L-cm) and damp weight (W-gm). Based on length's classification of *A. succinea* the data looks like a variation row. Totally 13 classes were created with length of 0.5-13.5cm. In samples the animals with length of 5.5 and 8.5cm prevailed to others (20-36 exemplars). Please, refer to histogram 1. Results will provide base line information for the management of the river to prevent it from future pollution as a result of human activities.

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Histogram 1: Dependence of the body size and number of *A. succinea*

With the help of Algorithms an average length and dispersion of *A. succinea* was calculated. Please, refer to the table 1.

Table 1: Calculation table of the average length and dispersion of *A. Succinea*

k	i	X _i	f _i	X _i *f _i	X̄	(X _i -X̄)	(X _i -X̄) ²	(X _i -X̄) ² *f _i
1	0.5-1.5	1	1	1	7.04	-6.04	36.4816	36.4816
2	1.5-2.5	2	1	2		-5.04	25.4016	50.8032
3	2.5-3.5	3	2	6		-4.04	16.3216	32.6432
4	3.5-4.5	4	3	12		-3.04	9.2416	27.7248
5	4.5-5.5	5	9	45		-2.04	4.1616	37.4544
6	5.5-6.5	6	20	120		-1.04	1.0816	21.632
7	6.5-7.5	7	35	245		-0.04	0.0016	0.056
8	7.5-8.5	8	23	184		0.96	0.9216	21.1968
9	8.5-9.5	9	11	99		1.96	3.8416	42.2576
10	9.5-10.5	10	2	20		2.96	8.7616	17.5232
11	10.5-11.5	11	2	22		3.96	15.6816	31.3632
12	11.5-12.5	12	1	12		4.96	24.6016	24.6016
13	12.5-13.5	13	1	13		5.96	35.5216	35.5216
Σ			111	781				379.2592

Based on calculation following data was obtained: an average (arithmetic) length is $X = 1/n * \sum X_i * f_i = 1/111 * 781 = 7.04$ cm and dispersion $S^2 = 1/n * \sum (X_i - X)^2 * f_i = 1/110 * 379.26 = 3.45$ cm.

Standard deviation $S_x = \sqrt{S^2} = \sqrt{3.45} = 1.86$ cm

Variation coefficient $V = S_x / X * 100\% = 1.86 / 7.04 * 100\% = 26\%$

Absolute uncertainty of average arithmetic $S_x^- = S_x / \sqrt{n} = 1.86 / \sqrt{111} = 1.86 / 10.54 = 0.18$ cm

Relative uncertainty of average arithmetic $X^- = 7.04 \pm 0.18$ cm

$S_x^- \% = S_x^- / X^- * 100\% = 0.18 / 7.04 * 100\% = 3\%$

At last we may obtain some results

1. Average length is 7.04cm
2. Variance indication is 3.45cm

3. Standard deviation is 1.86cm
4. Variation coefficient equals to 26% being closed to average point of variation
5. Absolute uncertainty of average arithmetic is 0.18
6. Relative uncertainty of average arithmetic is 3% meaning reasonable accuracy of calculation

In order to establish correlation between the body length and weight of *A. succinea* the normal distribution both of quantity should be made.

The table 2 below shows variation row of *A. succinea* body size-weight indicating length – L/cm and damp weight – W/gm

Table 2: Variation row of *A. Succinea* Σ f=111

f	1	1	2	3	9	20	36	23	10	2	2	1	1
L, cm	0.5-1.5	1.5-2.5	2.5-3.5	3.5-4.5	4.5-5.5	5.5-6.5	6.5-7.5	7.5-8.5	8.5-9.5	9.5-10.5	10.5-11.5	11.5-12.5	12.5-13.5
W, Damp weigh/gm	0,03	0,05	0,12	0,45	2,40	7,29	20,18	18,76	9,50	1,59	3,86	3,65	4,18
W ₁ ⁻ average damp weight/gm	0,03	0,05	0,12	0,15	0,27	0,36	0,56	0,82	0,95	0,80	1,93	3,65	4,18

According to results average damp weight of *A. succinea* is $1/111 * W_1 = 1/111 * 72,06 = 0,65$ gm.

Based on the table 2 average weights are being increased due to special regularity confirming normal distribution of damp weight of *A. succinea* as an occasional quantity.

4. Conclusion

Biostatistics analyze of *A. succinea*'s body length and damp weight makes possibility to conclude that the body length of *A. succinea* just like an occasional quantity equals in average to 7.04cm. Indicator of variance is 3.45cm, standard deviation

is 1.86 and variation coefficient equals to 26%. The absolute uncertainty of the body length's average arithmetics is 0.18 and relative uncertainty equals to 3% confirming that the average arithmetic calculation is accurate. Histogram of *A. succinea* body length describes normal distribution of the data. The average damp weight of *A. succinea* is 0.65gm

5. References

1. Lakin GF. Biometrics M.: high School, 1980, 24-39.
2. Plokhinsyi NA. Biometrics M.: State University of Moscow, 1970, 13-16.
3. Dospikhov BA. Field Samples Methodology M.: Kolos. 1979.