

RESEARCHES ON SOMATIC MEASUREMENTS TO SPIRLIN (*ALBURNOIDES BIPUNCTATUS*) FROM NADRAG RIVER BASIN

CERCETĂRI PRIVIND MĂSURĂTORILE SOMATICE LA BELDIȚĂ (*ALBURNOIDES BIPUNCTATUS*) DIN BAZINUL RÂULUI NĂDRAG

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With the help of body measurements we can appreciate the general development of fishes, the interdependence between different body regions, the growth rhythm, conformation and data use for relative and absolute values. Analyzing the average of female and male total body length it was noticed that at females the mean body length (9.99 ± 0.2 cm) is higher than in males (9.09 ± 0.23 cm). Mean body weight at females was 9.77 ± 0.71 , and in males was 6.97 ± 0.49 . Maximum mean height in females was 2.41 ± 0.06 cm and in males was 2.08 ± 0.05 cm. Minimum female body height was 0.82 cm while at males was 0.73 cm.

Key words: *Alburnoides bipunctatus*, somatic measurement, river.

Introduction

Using somatic measurements (body measurements) can be appreciated the status of fishes, their adaptability to environment and also the capacity to utilize food.

The paper aims to make a biometric study for spiralin *Alburnoides bipunctatus* fam. Cyprinidae, because in the literature there is little information on biometry of this specie.

Alburnoides bipunctatus is found in all cold, clear waters with relative rapid current (reophyle).

Materials and Methods

Harvest of biological material was made from the Nadrag river basin, that comes from Poiana Ruscai Mountains, Pades Peak (1370 m) and is part of Banat Hydrographic Space, Timis Hydrographic Basin. The harvesting was made using the fishing implement (1.2 x 1.2 m, with the net cell diameter of 0.7 x 0.7 cm) in 24 harvesting points on a river length of 5.5 km.

The most important somatic measurements to spiralin (*Alburnoides bipunctatus*-figure 1) were:

- body total length (L) [figure 1]: represents the distance between the tip of the mouth and the end of the caudal fin;
- body standard length (l): is measured from the distance between the tip of the mouth and the last scale row (caudal fin root);
- head length (h.l.): is measured from the distance between the tip of the mouth and the posterior opercular perpendicular line;
- snout length (s.l.): from the tip of the mouth to the anterior perpendicular line of the eye;
- caudal peduncle length (l.p.): represents the distance between posterior perpendicular line of anal fin base and the posterior limit of the body (to the last row of scales);
- maximum body height (H): is measured at the most developed part of the body;
- minimum body height (h): is determined in the narrowest part of the caudal peduncle;
- body weight (g): is determined with the help of weight scale.



Figure.1 *Alburnoides bipunctatus* (original photo)

Length measurements to spiralin (*Alburnoides bipunctatus*) were made using the calipers and normal ruler and for weight a electronic scale was used.

For data statistic processing the average was calculated and the dispersion indexes for: total body length (L), standard body length (l), head length (h.l.), snout length (s.l.), caudal peduncle length (l.p.), maximum body height (H), minimum body height (h) and body weight (g).

Results and Discussion

The averages and dispersion indexes for body parameters of females and males of spiralin *Alburnoides bipunctatus* are presented in table 1 and table 2.

Table 1

Body parameters at spirilin females (*Alburnoides bipunctatus*), harvested from Nadrag river basin

No.	Dispersion indexes	L	l	hl	sl	lp	H max.	h min.	Body weight (g)
		U. M – cm-							
1.	n	27	27	27	27	27	27	27	27
2.	x	9.99	8.26	1.81	0.50	1.65	2.41	0.82	9.77
3.	S	0.92	0.80	0.14	0.04	0.18	0.27	0.09	3.27
4.	Sx	0.20	0.17	0.03	0.01	0.04	0.06	0.02	0.71
5.	S ²	0.84	0.64	0.02	0.00	0.03	0.07	0.01	10.70
6.	CV	9.17	9.68	7.92	9.05	10.64	11.15	11.55	33.48
7.	Σ	209.70	173.50	37.97	10.42	34.69	50.62	17.12	205.16
8.	val. min.	8.10	6.70	1.51	0.41	1.20	1.86	0.56	3.44
9.	val. max.	11.50	9.60	2.08	0.58	2.01	2.94	1.00	18.6

Table 2

Body parameters at spirilin males (*Alburnoides bipunctatus*), harvested from Nadrag river basin

No.	Dispersion indexes	L	l	hl	sl	lp	H max.	h min.	Body weight (g)
		U. M – cm-							
1.	n	20	20	20	20	20	20	20	20
2.	x	9.09	7.43	1.65	0.48	1.58	2.08	0.73	6.97
3.	S	0.78	0.65	0.16	0.07	0.26	0.17	0.08	0.70
4.	Sx	0.23	0.19	0.05	0.02	0.07	0.05	0.02	0.49
5.	S ²	0.61	0.42	0.03	0.00	0.07	0.03	0.01	2.89
6.	CV	8.58	8.71	9.80	14.27	16.29	8.32	10.50	24.43
7.	Σ	109.12	89.20	19.81	5.72	18.93	24.96	8.80	83.59
8.	val. min.	7.70	6.50	1.26	0.34	1.09	1.72	0.61	5.03
9.	val. max.	10.70	8.80	1.86	0.58	2.09	2.36	0.85	10.51

Making an analysis on average of body length to females and males it is observed that females had the total body length of 9.99 cm (± 0.20 cm), and the males had the length of 9.09 cm (± 0.23 cm).

Analyzing the average weight it is observed that at females the average value (9.77 ± 0.71 g) was higher than the one noted to males (6.97 ± 0.49 g), a specific character to most fishes.

Caudal peduncle length was slightly bigger at females (1.65 ± 0.04 cm) compared to males (1.58 ± 0.07 cm).

Regarding the maximum body height it is recorded that the females are bigger of 2.41 ± 0.06 cm compared to 2.08 ± 0.05 cm from males.

Analyzing the variability coefficient of body parameters at males of *Alburnoides bipunctatus* it was observed that for total body length, standard length and head length exists a low variability (s%<10%). In the case of snout length, caudal peduncle and minimum height, the variability coefficient is medium

(s%=10-20%), and in the case of body weight the variability coefficient was high (sx%>20%).

In the case of females, analyzing the variability coefficient for the spiralin (*Alburnoides bipunctatus*) it was noted that for total body length, standard length head length and snout length a low variability was determined (s%<10%). In the case of caudal peduncle length, maximum and minimum height the variability coefficient is medium (s%=10-20%).

Regarding the average body weight, it was observed that it has a high variability (s%>20%).

Conclusions

- At females, the total body length was 9.99 cm, and at males it is 9.09 cm.
- Average weight at females was 9.77 g, and the males had 6.97 g.
- Average values for head length was bigger for females (1.81 ± 0.03 cm), compared to males (1.65 ± 0.05 cm).
- Average caudal peduncle length is slightly higher to females (1.65 ± 0.04 cm), compared to males (1.58 ± 0.07 cm).
- Average males height was lower (0.073 ± 0.02 cm) compared to females (0.82 ± 0.02 cm).

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