

# DETERMINATION OF THEORETICAL PROLIFICACY OF THE DANUBE GUDGEON (*GOBIO OBTUSIROSTRIS*) FEMALE FROM NADRAG RIVER BASIN

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## Abstract

In the existent literature, there is little information referring to theoretical prolificacy of the native fish species and for these reasons, knowing the following aspect is of paramount importance. The biological material under study has been made up by 30 females aged 3-4 years from the species *Gobio obtusirostris* that have been collected from the Nadrag river basin. The collection of samples for investigation has been done in the banned period through an electric fishing device Tyo FEG 3000. In order to find out the age of the biological material, the method of age interpretation according to fish scales has been used. Regarding the determination of theoretical prolificacy, the following aspects have been under study: the total length of the body, the body weight, the weight of the ovary, the body weight without the ovary, the number of spawns/ 0.10g and the number of spawns in the two ovaries. The average value of the total length at the female Danube Gudgeon body (*Gobio obtusirostris*), aged 3-4 years has been of  $10.01 \pm 0.15$  cm. The average of the body mass was of  $10.59 \pm 0.42$  g, and the average mass of the ovary was of  $1.73 \pm 0.42$  g. The average number of spawns obtained from the two ovaries of the Danube Gudgeon females aged 3-4 years has been of  $6066 \pm 422$ , and the given variability was high (CV= 38.07%). The fertility coefficient at the Danube Gudgeon female (*Gobio gobio obtusirostris*) aged 3-4 years was of 0.0174.

**Key words:** *Gobio obtusirostris*, theoretical prolificacy, Nadrag river basin

## INTRODUCTION

The reasons for carrying out such a research are rooted in the fact that in literature there is little information referring to theoretical prolificacy of the native fish species; therefore there is a need for elaborating on the following aspects.

The main reason that has determined us to choose this current topic is that we haven't been able to find at least one information on the theoretical prolificacy of the native fish species (*Gobio obtusirostris*), in the entire existing literature.

## MATERIAL AND METHODS

The biological material under study has been made up by 30 females aged 3-4 years from the species *Gobio obtusirostris* that have

been collected from the Banat Hydrographical Space, Timis Hydrographical Space, Nadrag River (the ecologic area of the barbell).

According to BANATEAN-DUNEA (2006; 2009), Nadrag River is divided into two ecologic areas: the trout area and the barbell area.

The trout area (*Salmo trutta fario*) is upstream to Jdioara locality and it is characterized by clear, well oxygenated water with low annual temperatures, high speed flow, a shallow riverbed and irregular banks.

The barbell area (*Barbus meridionalis petényi*) is downstream the trout area where waters have a deeper riverbed, with no waterfalls, the waterbed filled with sand and gravel. The superior limit reaches the altitude of 204 m, and the inferior one reaches 117 m.

The collection of samples for investigation has been done in the banned period through an electric fishing device Tyo FEG 3000, a device

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that fulfils the requirements of the European legislation in force.

In order to find out the age of the biological material, the method of age interpretation according to fish scales has been used.

Regarding the determination of theoretical prolificacy, the following aspects have been under study: the total length of the body, the body weight, the weight of the ovary, the body weight without the ovary, the number of spawns/ 0.10g and the number of spawns in the two ovaries.

## RESULTS AND DISCUSSIONS

In table no. 1 are presented the average values and the scattering index regarding theoretical prolificacy of the Danube Gudgeon (*Gobio obtusirostris*) female aged 3-4 years.

By analyzing the above table we observe that the average value of the total length at the Danube Gudgeon female body (*Gobio gobio obtusirostris*), aged 3-4 years has been of  $10.01 \pm 0.15$  cm.

By analyzing the variability coefficient for the above mentioned item we observe that at the Danube Gudgeon females aged 3-4, there was a low variability (CV= 8.45%).

The average of the Danube Gudgeon female body mass (*Gobio obtusirostris*) aged

3-4 was of  $10.59 \pm 0.42$  g, and the recorded variability was high (CV= 21.97%).

The ovary average mass was of  $1.73 \pm 0.42$  g, and the body average mass without the ovary was of  $8.66 \pm 0.36$  g; the obtained variability for the two items mentioned previously was too high.

The mass of 0.10 g spawns at Danube Gudgeon females aged 3-4 years has recorded an average number of  $342.4 \pm 13.1$  spawns; the recorded variability was high (CV= 21.01%).

The average number of spawns obtained from the two ovaries of the Danube Gudgeon females aged 3-4 years was of  $6066 \pm 422$ , and the recorded variability was high (CV= 38.07%).

The fertility coefficient at the Danube Gudgeon (*Gobio obtusirostris*) females aged 3-4 years was of 0.0174.

The weights of the ovaries at Danube Gudgeon (*Gobio obtusirostris*) females aged 3, represents 16,33% from the body weight.

The correlation coefficients between different aspects under study are presented in table 2.

By analyzing the above mentioned table, we realized that in most of the cases there are strong positive correlations.

Table 1 The average values and the scattering index regarding theoretical prolificacy of the Danube Gudgeon (*Gobio obtusirostris*) female aged 3-4

The average and the indexes of scattering	the total body length	the body weight	the ovary weight	the body weight without the ovary	spawn no./0,10g	spawn no /1g	spawn no. from the two ovaries
	UM						
	cm	g	g	g	piece	piece	piece
n	30	30	30	30	30	30	30
X	10.01	10.59	1.73	8.66	342.4	3424	6066
Sx	0.15	0.42	0.07	0.36	13.1	131	422
s	0.84	2.32	0.40	1.99	71.9	719	2309
Variance	0.71	5.42	0.16	3.97	5174.1	517411	5331301
CV	8.45	21.97	23.68	23.03	21.01	21.01	38.07
Min.	8.60	6.12	0.94	4.72	202.0	2020	2886
Max.	11.32	13.03	2.20	10.76	412.0	4120	8866
The fertility coefficient	0.0174						

Table 2 The correlation coefficients for the aspects under study

	the total body length	the body weight	the ovary weight	the body weight without the ovary	no. of spawns /0,10g.
body weight	0.944 (p= 0.000)				
ovary weight	0.855 (p= 0.000)	0.953 (p= 0.000)			
the body weight without the ovary	0.950 (p= 0.000)	0.998 (p= 0.000)	0.942 (p= 0.000)		
no. of spawns/ 0,10g.	0.668 (p= 0.000)	0.575 (p= 0.001)	0.487 (p= 0.006)	0.568 (p= 0.001)	
total spawns	0.880 (p= 0.000)	0.886 (p= 0.000)	0.866 (p= 0.875)	0.875 (p= 0.000)	0.856 (p= 0.000)

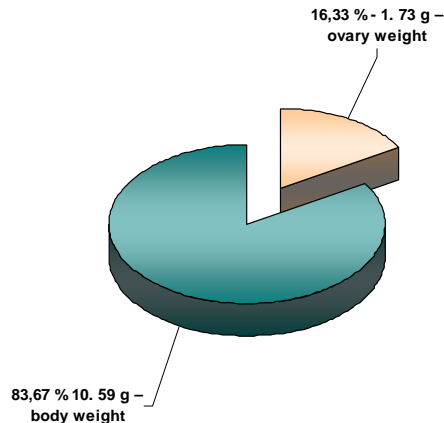


Figure 1 The percentage report between the body weight and the ovaries weight at the Danube Gudgeon females (*Gobio obtusirostris*)

## CONCLUSIONS

1. The Danube Gudgeon females aged 3-4 years and with an average weight of  $10.59 \pm 0.42$  g have had approximately  $6066 \pm 422$  spawns.

2. The average mass of the ovary was  $1.73 \pm 0.42$  g.

3. The ovaries weight at Danube Gudgeon females (*Gobio obtusirostris*) aged 3-4 years, represents 16,33% from the body weight.

4. The fertility coefficient at Danube Gudgeon females aged 3-4 years has been of 0.0174.

5. The correlation coefficients have proven that in most of the cases there were positive correlations.

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