

## SEASONAL NUMERICAL DYNAMICS OF THE GASTROPODA POPULATIONS FROM AN EUTROPHIC LACUSTRINE ECOSYSTEM (CASE STUDY)

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**Abstract.** *The present paper renders the results of the research regarding the seasonal numerical dynamics of the Gastropoda populations from Cilieni pool. There are emphasized the date referring to the numerical and percentage distribution of the species, the individuals' number from the seasonally drawn samples, the dimensional values for the pre-productive, productive, and post-productive age categories.*

**Keywords:** *gastropods, seasonal dynamics.*

**Rezumat.** *Dinamica numerică sezonală a populațiilor de gastropode dintr-un ecosistem lacustru eutrof (Studiu de caz).* În lucrare sunt prezentate rezultatele cercetărilor cu privire la dinamica numerică sezonală a populațiilor de gastropode din balta Cilieni. Sunt precizate datele referitoare la distribuția numerică și procentuală a speciilor, numărul de exemplare din probe prelevate sezonal, valorile dimensionale pentru categoriile de vârstă prereproducătoare, reproducătoare și postreproducătoare.

**Cuvinte cheie:** *gastropode, dinamică sezonală.*

### INTRODUCTION

The research took place within Cilieni Pool (Fig. 1). It makes part of the category of eutrophic ecosystems due to the high biological production of the macrophytes primary producers, as well as that of the phytoplankton, zooplankton, and zoobenthos (CIOBOIU, 2007). The Gastropoda populations represent an important group for the biological production of the pool.

From the ecological point of view, it is well known the fact that the presence of different species is closely related to the structural features of the ecosystems. Cilieni pool is representative especially due to the fact that macrophytes represent the dominant element. This is a major factor that explains the presence of phytophilous species (Fig. 2).

### MATERIAL AND METHOD

In order to establish the seasonal numerical dynamics, there have been collected gastropods in three characteristic stages: spring, summer, and autumn. We have determined the species and established the morphometrical features (dimensions: h, w).

#### The Seasonal Numerical Dynamics

The structure of Gastropoda populations reveals the fact that the dominant species are the following ones: *Viviparus acerosus*, *Physella (Costatella) acuta*, *Radix balthica*, *Lymnaea stagnalis*, *Planorbis planorbis*, *Planorbarius corneus* (CIOBOIU 2002, GROSSU 1993). The ratio between groups and species proves that the families *Thiaridae*, *Physidae*, *Lymnaeidae*, *Planorbidae* hold the highest number of species (Table 1).

Table 1. The numerical and percentage distribution of the species in families.  
Tabel 1. Distribuția numerică și procentuală a speciilor pe familii.

Family	Number of species	%
<i>Viviparidae</i>	1	10
<i>Valvatidae</i>	1	10
<i>Thiaridae</i>	2	20
<i>Physidae</i>	2	20
<i>Lymnaeidae</i>	2	20
<i>Planorbidae</i>	2	20

By analysing the seasonal numerical distribution, it results that the greatest number of individuals is registered by the species *Viviparus acerosus* – 189 individuals in spring, 87 in summer, and 72 in autumn. All the other species display the same dynamics of the individuals' number, namely the greatest numerical densities are registered in spring (Table 2).



Figure 1. The location of the Cilieni pool.  
 Figura 1. Localizarea bălții Cilieni.



Figure 2. Large surfaces covered by macrophytes.  
 Figura 2. Suprafețe mari acoperite cu macrofite.

Table 2. The seasonal numerical dynamics of the Gastropoda populations from Cilieni pool.  
 Tabel 2. Dinamica numerică sezonală a populațiilor de gastropode din balta Cilieni.

Species	Number of individuals / season		
	Spring	Summer	Autumn
<i>Viviparus acerosus</i>	189	87	72
<i>Physella (Costatella) acuta</i>	114	37	27
<i>Lymnaea stagnalis</i>	110	35	25
<i>Planorbis planorbis</i>	105	30	22
<i>Radix balthica</i>	100	26	17
<i>Planorbis planorbis</i>	10	25	20
<i>Physa fontinalis</i>	6	5	-
<i>Valvata (Cincina) piscinalis</i>	17	3	-
<i>Esperiana esperi</i>	3	8	-
<i>Esperiana (Microcolpia) daudebardii acicularis</i>	10	6	-

A significant fact of the seasonal numerical density is that the species *Physa fontinalis*, *Valvata (Cincina) piscinalis*, *Esperiana esperi*, *Esperiana (Microcolpia) daudebardii acicularis* were not registered in autumn. It is also worth mentioning that, generally, all the other species register the greatest number of individuals in autumn.

The largest number of individuals registered in spring may be explained by the fact that this is the characteristic period for reproduction, which is also reflected by the dimensional values for different age categories (Table 3).

Table 3. Dimensional values for different age categories at the Gastropoda populations from Cilieni pool.  
Tabel 3. Valorile dimensionale pentru diferite categorii de vârstă la populațiile de gastropode din balta Cilieni.

Species	The characteristic dimensions of different age categories (h, w = mm)		
	Pre-productive	Productive	Post-productive
<i>Viviparus acerosus</i>	h = 10 - 20 l = 7 - 15	h = 20.1 - 40 l = 15.1 - 30	h = more than 40 l = more than 30
<i>Valvata (Cincina) piscinalis</i>	h = 1.5 - 5 l = 1 - 3	h = 5.1 - 8 l = 3.1 - 5	h = more than 8 l = more than 5
<i>Esperiana esperi</i>	h = 0.1 - 10 l = 0.1 - 5	h = 10.1 - 18 l = 5.1 - 8	h = more than 18 l = more than 8
<i>Esperiana (Microcolpia) daudebardii acicularis</i>	h = 0.1 - 10 l = 0.1 - 3	h = 10.1 - 17 l = 3.1 - 6	h = more than 17 l = more than 6
<i>Physa fontinalis</i>	h = 0.1 - 5 l = 0.1 - 3	h = 5.1 - 9 l = 3.1 - 7,5	h = more than 9 l = more than 7,5
<i>Physella (Costatella) acuta</i>	h = 0.1 - 5 l = 0.1 - 4	h = 5.1 - 11 l = 4.1 - 6	h = more than 11 l = more than 6
<i>Lymnaea stagnalis</i>	h = 10 - 25 l = 70 - 10	h = 25.1 - 50 l = 10.1 - 25	h = more than 50 l = more than 25
<i>Radix balthica</i>	h = 0.1 - 15 l = 0.1 - 10	h = 15.1 - 21 l = 10.1 - 15	h = more than 21 l = more than 15
<i>Planorbis planorbis</i>	h = 0.1 - 1,5 l = 0.1 - 9	h = 1.6 - 3,5 l = 9.1 - 17	h = more than 3,5 l = more than 17
<i>Planorbarius corneus</i>	h = 1.5 - 5 l = 3 - 7	h = 5.1 - 11 l = 7.1 - 20	h = more than 11 l = more than 20

The lower values of the individuals' number registered in summer and especially in autumn for all the species are induced by the fact that the senescent samples disappeared, thus the young and adult individuals predominating (CIOBOIU, 2006, NEGREA, 1971).

## CONCLUSIONS

According to the seasonal numerical dynamics we underline that the greatest number of individuals is registered by the species *Viviparus acerosus*. The greatest numerical densities are registered in spring, when the reproduction process takes place. The lower values characteristic for summer and autumn are mainly induced by the disappearance of the senescent individuals.

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