

PRELIMINARY ASPECTS CONCERNING STRUCTURE ZOOPLANKTON IN THE BALTA MARE – CARJA 1 FISH FARM

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Abstract:

The present paper presents information on the structure and the dynamics of the water ecosystem's zooplankton of the Carja 1 fish farm - Vaslui county where they grow carps and Asian ciprinides as common fish.

To establish the structure and the dynamics of the zooplankton, two samples were taken, (in the spring and in the autumn) from 6 stations with the help of a Garmin GPS 7- type navigation system.

When analysing the number of individuals and the species present in the zooplankton's structure, one can notice the low development level of the animal zooplankton. From the quantity point of view, one can notice the numerical abundance of the rotifers in all the analysed samples. The small number of species and algae specimens determined in the zooplankton's structure emphasizes the reduced level of trophicity and biodiversity of the analysed ecosystem.

Key words: zooplankton, species, density, abundance and ecosystem

INTRODUCTION

The zooplankton, represents an important link of the aquatic ecosystems trophic chain, being the primary producer of organic substance for the planktonophag fish species.

The presence of some zooplankton species in animal plankton could offer indications regarding the fish basin water quality. Therefore, various species of zooplankton represent the pointers of trophicity and pollutant level of the aquatic ecosystems water.

The development of zooplankton was analyzed in Balta Mare of Carja 1 fish farm, in the area of Murgeni village, Vaslui county, as mark DNE 581.

The fish basin has a 297 ha surface with a depth between 90 -140 cm.

The water is taken over the supply source, the Prut river, in autumn after the angle of biological material was done when 20% of water was bail out.

MATERIAL AND METHOD

In 2008 they analysed the biological characteristics of the Balta Mare ecosystem.

To establish the zooplankton's structure and dynamics they prelevated two sets of biological samples, in spring (26th of May) and in autumn (13th of October) from 6 stations established with the help of a Garmin GPS 72- type navigation system, numbered C1-C5, C6A-E (feeding and evacuation), figure 1.

The zooplankton samples were prelevated with the planctonic net, filtering approximately 10 l for water mass, were fixed in the ground with alcohol and glycerin (2 parts of alcohol solution 90% + 1 part glycerol + 1 part distilled water, or 2 parts of alcohol 70% + 1 part glycerin), in a ratio of 1:100 (1 ml of solution for 100 ml of sample). The processing was done after a previous concentration through sedimentation.

The animal plankton was analysed from a qualitative (the number of individuals and species) and quantitative (the density and the numerical abundance) point of view.



Figure 1. Points of prelevation from Balta Mare of Carja 1 fish farm

RESULTS AND DISCUSSIONS

The microscopic analyse of the zooplankton samples has distinguished some aspects:

From a qualitative point of view the zooplankton has registrated 22 species in both samples, being this way weak represented. The numerical weight was represented by the rotifers (*Asplanchna priodonta*, *Brachionus angularis* (figure 2), *Brachionus rubens*, *Filinia longisaeta*, *Trichocerca tigris*, *Keratella quadrata*) so in the spring like in the autumn.

Cladocers were distinguished in the samples of C3 –C6 stations in the spring season with the species like *Chidorus piger*, *C. sphaericus*, *Ceriodaphnia reticulata*, *Bosmina longirostris*, *Alonella nana juvenile and adult*

stage, and in the autumn they were noticed in all the stations.

Copepods appear in all the stations as in the spring like in the autumn with the *Cyclops strennus* species in the nauplien stage (figure 3).

From a quantitative point of view, the numerical density varies between 582-1635 ex/l in the first samples (in spring) and 415-1737 ex/l in the autumn samples (graphic 1). In the first set sample, the numerical abundance of rotifers varies between 0-91%, that of cladocers varies between 0-81 % and that of the copepods varies between 9-52 %. Regarding the second set samples the numerical abundance of rotifers varies between 69-100% that of cladocers varies between 0-15 % and that of the copepods varies between 0-15 % (table 1, graphic 2 and 3).



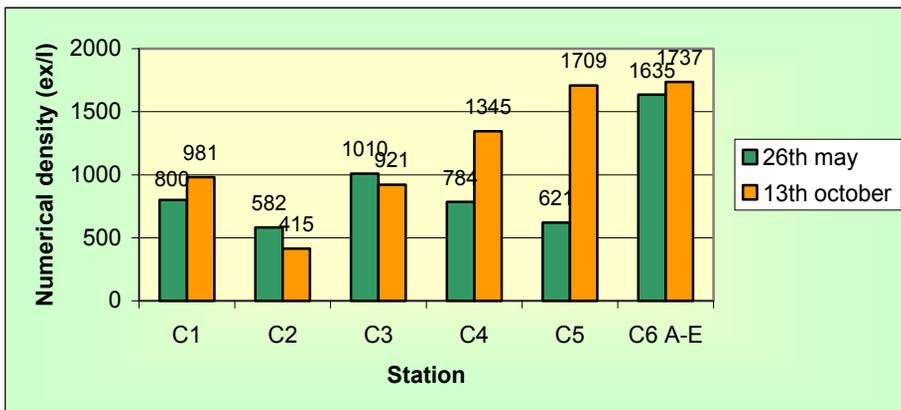
Figure 2. *Brachionus angularis* (original photo)



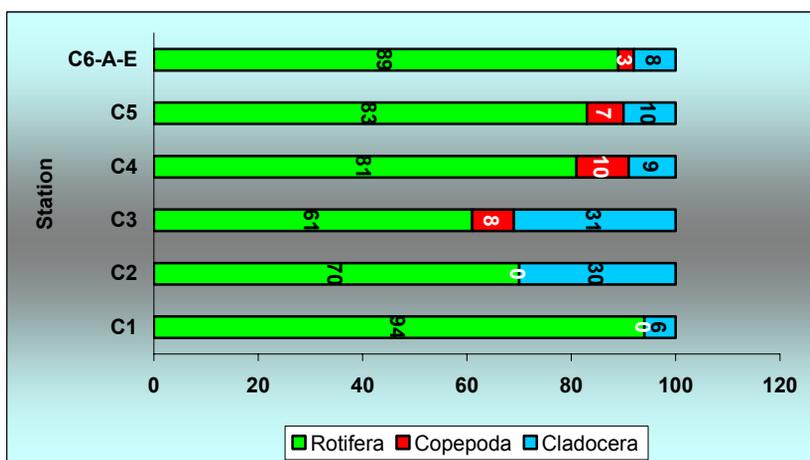
Figure 3. Nauplien stage of copepods (original photo)

Table 1
 The structure of Balta Mare-Carja zooplankton

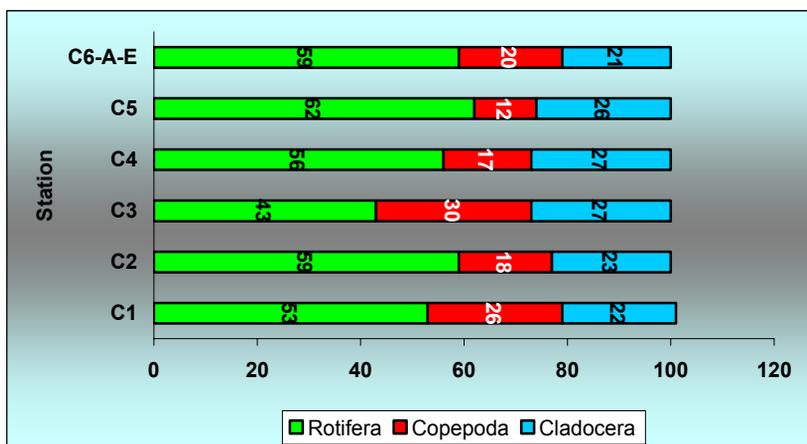
Station	Data	Nr. ex/l	The relative numerical abundance %			The dominant species
			Rotiferi %	Cladocere %	Copepode %	
C1	26.05	800	94	0	6	Brachionus rubens, Metanauplien stage of copepods
	13.10	981	53	26	22	Brachionus angularis, Nauplien stage of copepods
C2	26.05	582	70	0	30	Brachionus rubens, Metanauplien stage of copepods
	13.10	415	59	18	23	Brachionus angularis, Nauplien stage of copepods
C3	26.05	1010	61	8	31	Brachionus rubens, Chidorus piger, juveniles
	13.10	921	43	30	27	Brachionus angularis, Alonella nana, Nauplien stage of copepods
C4	26.05	784	81	10	9	Brachionus rubens, Chidorus piger, juveniles
	13.10	1345	56	17	27	Brachionus angularis, Alonella nana, Nauplien stage of copepods
C5	26.05	621	83	7	10	Trichocerca tigres, Nauplien stage of cladocers, Metanauplien stage of copepods
	13.10	1709	62	12	26	Brachionus angularis, Alonella nana, Nauplien stage of copepods
C6-A-E	26.05	1635	89	3	8	Trichocerca tigres, Nauplien stage of cladocers, Metanauplien stage of copepods
	13.10	1737	59	20	21	Brachionus angularis, Alonella nana, Nauplien stage of copepods



Graphic 1. The zooplankton numerical density (ex/l)



Graphic 2. The zooplankton's numerical abundance (%) in 26.05.2008



Graphic 2. The zooplankton's numerical abundance (%) in 13.10.2008

From graphs analyse one can notice that the zooplankton is present in all the analysed stations during the vegetative season, manifesting a certain proportionality as far as the numerical density in all the studied stations is concerned. In the first set samples, zooplankton predominates at C6 station level, and in the second set samples it predominates at C5 station level.

From numerical abundance point of view, the taxonomic group of rotifers predominate in both samples sets, but with a certain proportionality of the cladocers and copepoders in the second sample set.

CONCLUSIONS.

- The quantity and quality studies of Balta Mare zooplankton - Carja 1 fish farm have showed that a reduced specific diversity was registered.

- The density of species is relatively constant and proportionally in all of the analysed samples.

- From a quantitative point of view, one can notice the numerical abundance of the rotifers in all the analysed samples, this fact showing that the water of the fish basin is a poor (mild) productive water.

- The small number of species and exemplary determined in the zooplankton's structure emphasizes the reduced level of

trophicity and biodiversity of the analysed ecosystem.

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