ISSN 1517-6770

Revista Brasileira de
ZOOCIÊNCIAS
10(2): 105-114, agosto 2008

Ecology of a zooplanktonic community in an urban lake in southeastern Brazil (Uberlândia, MG)

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Abstract. Ecology of a zooplanktonic community in an urban lake in Southeastern Brazil (Uberlândia, MG) - This study aimed to determine the zooplanktonic composition and abundance from the Lake in Parque Municipal do Sabiá, Uberlândia, Southeastern Brazil, emphasizing the Copepoda species. In addition, abiotic and biotic relationships, temporal changes and environmental analyses through bioindicators were also evaluated. Samples were monthly collected from June to November 2005 using an "Instant-Collector" with 10 L capacity. The zooplanktonic composition was sampled in three depths and some physical and chemical variables were determined (temperature, pH, conductivity and dissolved oxygen). Copepoda and Cladocera prevailed over Rotifera. The majority of Rotifera individuals belonged to *Keratella* and *Brachionus*. Cladocera were mainly restricted to *Bosmina*, *Moina*, *Ceriodaphnia* and *Diaphanosoma*, although individuals from rarer genus were also found. The five Copepoda species observed were *Notodiaptomus conifer, Notodiaptomus henseni, Thermocyclops minutus, Eucyclops ensifer* and *Mesocyclops longisetus*. Ecological interactions among the three main zooplanktonic groups were discussed through temporal succession between natural species. Calanoida prevailed in number over Cyclopoida, suggesting the environmental characterization of the lake as mesotrophic, with low environmental disturbance. Regarding the abundance, these three zooplanktonic groups showed a significantly higher density in summer. In general, the vertical distribution of the populations in water column did not follow a regular pattern and no relationships with the abiotic variables were detected. We suggest that more constant limnological evaluations of this urban reservoir are required in order to preserve the aquatic system and to avoid irreversible impacts on the biodiversity.

Key words: Freshwater zooplankton, urban lake, temporal variation.

Resumo: Este trabalho objetivou determinar a composição e abundância zooplanctônica da Lagoa do Parque Municipal do Sabiá, na cidade de Uberlândia, Brasil Sudeste, enfatizando as espécies de Copepoda. Também foram discutidas relações abióticas e bióticas, variações temporais, bem como a caracterização da qualidade da água baseando-se em grupos bioindicadores. Foram realizadas coletas mensais, de junho a novembro de 2005, utilizando-se um "Coletor Instantâneo" de 10 L de capacidade. A composição do zooplâncton foi amostrada em três profundidades e alguns parâmetros físicos e químicos da água foram mensurados (temperatura, pH, condutividade e oxigênio dissolvido). Houve predomínio de Copepoda e Cladocera sobre Rotifera. Quase a totalidade dos indivíduos de rotíferos amostrados da lagoa pertenceram aos gêneros *Keratella* e *Brachionus*. Os cladóceros ficaram compreendidos principalmente entre *Bosmina*, *Moina*, *Ceriodaphnia* e *Diaphanosoma*, podendo ainda existir representantes de gêneros mais raros. Dentre Copepoda, houve uma riqueza de cinco espécies, *Notodiaptomus conifer*; *Notodiaptomus henseni*; *Thermocyclops minutus*; *Eucyclops ensifer* e *Mesocyclops longisetus*. Interações ecológicas entre os três principais grupos zooplanctônicos foram discutidas através da sucessão temporal entre as espécies naturais. Os copépodes calanóides predominaram em número sobre os ciclopóides, sugerindo a caracterização ambiental da lagoa como mesotrófica e pouco impactada. Quanto à abundância, os três grupos zooplanctônicos apresentaram densidades significativamente maiores nos meses de verão. A distribuição vertical das populações ao longo da coluna de água, em geral, não seguiu um padrão regular, nem apresentou relações com os dados abióticos. Sugere-se avaliações limnológicas mais constantes dessa represa urbana, afim de que se possa preservar este corpo hídrico e evitar impactos irreversíveis para toda a diversidade do parque.

Palavras-chave: Zooplâncton de água doce, lago urbano, variação temporal.

INTRODUCTION

In Brazil, the construction of artificial lakes is a very common practice that produces serious consequences, such as detrimental alterations in the structure of hydrographic basins and their associated communities (TUNDISI, 1999). Studies on the composition of organisms in an aquatic ecosystem, mainly the planktonic community, which plays an important role in the maintenance of the trophic chain, constitute a way to demonstrate the unquestionable importance of water conservation as well as the conservation of all organisms that survive in that environment.

Artificial ponds are exposed to several environmental impacts that are caused by human actions. Factors that can determinate the plankton composition include: time of water retention, ecological relations as competition and predation among biotic community, water trophic conditions, and contribution of pesticides or herbicides as well as seasonality (ARMENGOL & MIRACLE, 1999; MATSUMURA-TUNDISI, 1999; TUNDISI, 1999). Thus, each pond influences in a different way the diversity of the zooplankton community and the predominance of each group upon another. Therefore, different areas should be considered and studied as unique sites.

Despite the dominance in abundance of Rotifera and the great diversity of Cladocera in most freshwater systems, the largest biomass among all zooplanktonic groups is represented by Copepoda (RAYMONT, 1963; ESTEVES, 1998). Because of this prevalence, these microcrustaceans play an important role in the cycle of nutrients and in the flow of energy inside and outside the aquatic ecosystem, also sustaining several terrestrial animals.

Many organisms of the zooplankton are important environmental bioindicators. The composition and abundance of the plankton are parameters that can work as sensors of the environmental properties and they reflect the whole dynamics of the ecosystem (MARGALEF, 1983; SCHÄFER, 1984; INFANTE, 1988; ROCHA *et al*., 2000). In that sense, the evaluation of environmental impacts through organisms that are potentially bioindicators is an important tool of Limnology (GUSMÃO *et al*., 2004, PEDROSO & ROCHA, 2005).

The main objective of this work was to determine the zooplanktonic composition of the lake in Parque Municipal do Sabiá, Uberlândia (State of Minas Gerais, Brazil) emphasizing the Copepoda species. In addition, this study aimed to evaluate the influence of the physical and chemical variables of the water (temperature, pH, dissolved oxygen and conductivity) on the abundance of Copepoda; determine the changes in seasonal patterns of those organisms; and associate bioindicators with the water quality.

MATERIAL AND METHODS

The samples were taken at the main lake of Parque Municipal do Sabiá (48°14'02"W, 18°54'52"S) (Fig.1), located at approximately six kilometers from downtown, in the urban area of Uberlândia (State of Minas Gerais, Brazil). The dam was built before the inauguration of the park, in 1982, by FUTEL (Fundação Uberlandense de Turismo, Esporte e Lazer) on Jataí Stream, for recreational purposes (COLESANTI, 1994). The lake has an area of approximately 100,000 m^2 and a perimeter of 2,000 m; its maximum depth is about 7.0 m.

In Uberlândia, more than half of the atmospheric dynamics is controlled by Intertropical Systems, that is ruled in addition by the Polar Systems. Because of these air currents, the climate in Uberlândia is classified as Tropical of Altitude or Cwa, according to KÖPPEN (1948), with rainy summers (October to March) and dry winters (April to September), annual average temperature between 18°C and 24°C and annual average precipitation of 1,707mm (DEL-GROSSI, 1993).

Monthly samples were taken from June to August (fitted in winter months) and from September to November (fitted in summer months) in the year of 2005. All samples were made between nine and 10 hours o'clock, during the morning. An "Instant-Collector" with 10 liters of capacity (designed by PINESE), was used in the capture of organisms (Fig.2). This method, not described yet in scientific literature (paper on preparation), works in a similar way to the

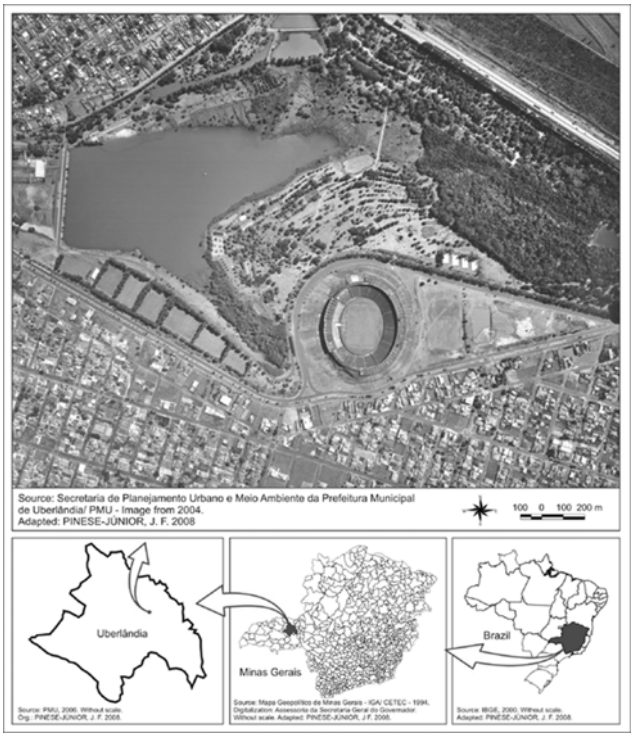

Figure 1. Aerial photograph of the Lake of the Parque Municipal Sabiá. Source: Prefeitura Municipal de Uberlândia (PMU); location of Uberlândia and Minas Gerais in Brazil. General organization: José Fernando Pinese Júnior, 2008.

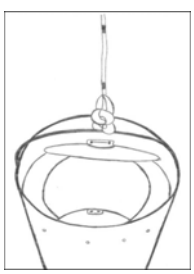

Figure 2. Instant-Collector (design by Pinese) opened, showing the two free covers in the extremities and the graduated rope. Drawing: Olívia Penatti Pinese, 2008.

Van Dorn bottle, allowing the selective collection in the column of water. However, it seemingly works with smaller disturbance, due to its system of closing in an instantaneous way, because of the weight of the water column. This technique, designed by Pinese, was also used by Ramos (2002) to evaluate the zooplanktonic community of the Emborcação Reservoir, in Araguari (State of Minas Gerais, Brazil). Thus, the vertical composition of plankton was monthly evaluated in three different depths, at the deepest point of the lake: surface, middle depth (3 meters) and deep depth (6 meters). At each depth, 50 liters of water were taken and filtered in a 17 µm plankton net. The material was preserved in ethyl alcohol to 95% (Hall, 1964; Black & Dodson, 2003; Coelho, 2004).

The water transparency was measured through the Secchi disk to indirectly measure the trophic conditions of the lake. It was also evaluated the temperature of the water, the pH, conductivity and dissolved oxygen, through the Handylab-1 (Schott) and Aquacheck-3 (Radelkis) equipments.

All organisms sampled were counted under stereomicroscopy and microscopy. The rotifers and cladocerans were enumerated in each sample, and the most frequent individuals of those groups were identified to genus. The copepods were analyzed in a quantitative and qualitative way, and identified to species. The young phases were also analyzed. The density (org · m^{-3}) of the individuals was calculated using the formula: n° org · m^{-3} = (n/v) · 1000, where (n) is the number of organisms in the sample, and (v) is the total volume of water sampled (50 liters).

Specialized taxonomic keys, like Rocha & Matsumura-Tundisi (1976); Matsumura-Tundisi & Rocha (1983); Matsumura-Tundisi (1986); Silva *et al*. (1989), Dussart & Defaye (1995) and Morales *et al*. (1996) were used for Copepoda identification. For Rotifera identification, Pontin (1978) and Koste (1978) were used, and for Cladocera, Elmoor-Loureiro (1997). Samples of the zooplanktonic material are kept at the Laboratory of Zoology, Biology Institute, Universidade Federal de Uberlândia.

In order to verify the existence of significant statistical differences among the frequencies of the zooplanktonic groups (Copepoda, Cladocera and Rotifera) in the months of winter and summer, the Qui-square test was applied (Siegel, 1975), considering the values of surface, middle depth and bottom of the water column. The Coefficient of Correlation of Spearman (Siegel, 1975) was applied to verifying the existence of significant statistical correlations among the densities of the zooplanktonic groups to each other, and the significant statistical correlations among the groups densities and

temperature, pH, oxygen and conductivity. The significance level for the statistical tests was established in 0.05, in a bilateral proof. To graphically correlate the distribution of the abundances to the environmental variables, a Canonical Correspondence Analysis (CCA) was applied (TER-BRAAK, 1986; 1988; 1995; CANOCO program version 3.12).

RESULTS

Abiotic parameters are available on Table 1. The mean water temperature of the winter months was 20.2°C, and of the summer, 24.4°C. In November the highest temperatures were observed (average of 25.2°C), and in July the lowest (average of 19.5°C). The pH values were around neutrality during almost the whole period of study and along all depths, with average of 6.90. Only in June those values became slightly basic (7.7). The levels of dissolved oxygen have not oscillated in an abrupt way during the period (average of 66% of saturation). Electric conductivity was high in August (average of 44.7mV) and November (average of 39.7); in the other months, those averages were lower. The values of Secchi Disk were higher in the first three samplings (average of 1.73 meters), and slightly lower in the hot months (average of 1.57 meters), when the water was darker. In every sampling day the whether was sunny, with persistent winds.

In relation to the zooplanktonic composition, rotifers were mainly limited to *Keratella*; *Brachionus* and *Trichocerca* genera, and concerning Cladocera the predominant genus were *Bosmina*, *Moina*, *Diaphanosoma* and *Ceriodaphnia*. These four genus are very common among the cladocerans (Infante, 1988). The copepods richness was summarized in five species (Tab.2), *Notodiaptomus conifer*, *Notodiaptomus henseni*, *Thermocyclops minutes*, *Eucyclops ensifer* and *Mesocyclops longisetus*, being the two first ones belonging to the Superorder Calanoida and the last three ones to the Superorder Cyclopoida. Figure 3 presents the adults population total densities comparatively.

Table 1. Mean values of abiotic variables in the six sampled months, from the lake of Parque Municipal do Sabiá, year of 2005.

Variables	Jun	Jul	Aug	Sep	Oct	Nov
Temperature (°C)	20.6	19.5	20.6	23.3	24.8	25.2
pH	7.7	7.0	6.6	6.9	6.9	6.4
Conductivity (mV)	28.3	22.7	44.7	20.3	11.7	39.7
Dissolved oxygen (%)	61.0	71.0	68.7	61.7	81.3	56.7
Secchi Disk (m)	1.70	1.70	1.80	1.60	1.60	1.50

Table 2. Copepoda species from the lake of Parque Municipal do Sabiá.

Superorder	Species
Calanoida	**Fam. Diaptomidae**
	Subfam. Diaptominae
	Notodiaptomus conifer (Sars, 1901)
	Notodiaptomus henseni (Dahi, 1891)
Cyclopoida	**Fam. Cyclopidae**
	Subfam. Eucyclopinae
	Eucyclops ensifer Kiefer, 1936
	Subfam. Cyclopinae
	Mesocyclops longisetus (Thiebaud, 1914)
	Thermocyclops minutus (Lowndes, 1934)

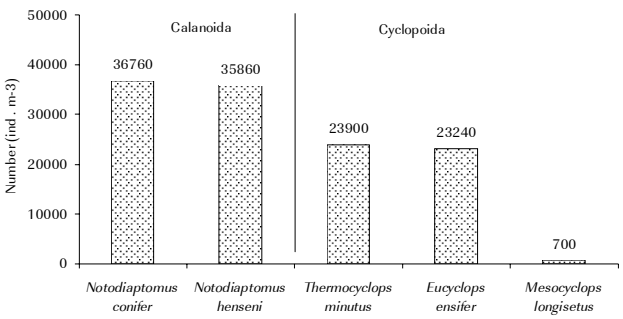

Figure 3. Total density population of adult Calanoida and Cyclopoida species in the six samples taken at the lake of Parque Municipal do Sabiá, year of 2005.

The copepodits represented approximately 63% of Copepoda's total organisms sampled along the months. Nauplii phases reached 133760 ind/m^3. The number of Calanoida copepodits was 48940 ind./m^3 and the Cyclopoida copepodits reached 21220 ind/m^3.

Concerning the proportion among the tree main zooplanktonic groups, it was verified that Copepoda and Cladocera prevailed over Rotifera. The copepods represented 46% of the total zooplankton, followed by cladocerans (41%) and rotifers (13%). A quantitative temporal alternation of these groups could be observed (Fig.4). It was observed great changes in number of individuals for all groups, from

June to November. The abundance of Rotifera suffered a great decline in June and July, also decreasing in August, however in a smaller rate. But from August until November, the rotifer community grew in an approximately uniform way. In November, the highest density of individuals for the group was recorded (37780 ind/m^3). In the month of the smallest density, August, the number was only of 3 620 ind/m^3 (Fig.4).

The fluctuation of the abundance of cladocerans occurred in an opposite way (Fig.4). There was an increment from June to August, growing until September, when density reached 55540 ind/m^3. That number gradually decreased in September and November, reaching to 44180 ind/m^3. The lowest density of cladocerans was detected in June, with only 27880 ind/m^3 and the highest density in September, reaching 55540 ind/m^3.

Copepods presented an increment of densities along five months of samples, except between October and November. The period of higher increment rate was from August to September, with density values ranging from 42780 ind/m^3 to 76120 ind/m^3. In October, the highest density of the group was registered for the total period, 84160 ind/m^3, and in June, the lowest, 22920 ind/m^3 (Fig.4). Concerning the three groups, Rotifera prevailed just in June; Cladocera prevailed in July and August; and Copepoda prevailed in September, October and November, then, during all the summer season (warm and rainy).

Proportions between Calanoida and Cyclopoida copepods did not varied much. Only in June, the population of Calanoida was 50% inferior in relation to Cyclopoida. For the other months, Calanoida always prevailed. In October, it was observed the lowest density of Cyclopoida (about 30%). August and November maintained approximately the same proportion of 30% Cyclopoida and 70% Calanoida. In July and September this structure have not altered so much among copepods, with about 40% and 60% in July and of 35% and 65% in September, respectively.

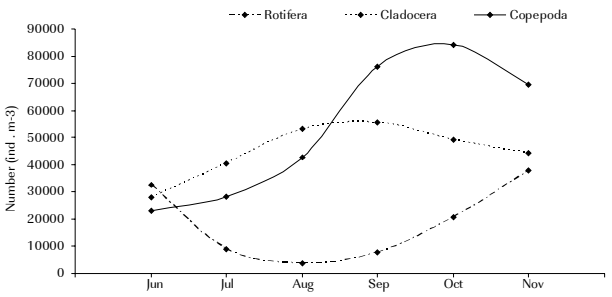

Figure 4. Quantitative temporary alternation in density (individuals · m^{-3}) of the main three zooplanktonic groups in the lake of Parque Municipal do Sabiá, in every sampled month in 2005.

The results in Table 3 demonstrate that there were no significant statistical correlations between the values of environmental variables to each other. Table 4 demonstrates that there were not also significant statistical correlations among abundances of the zooplanktonic groups analyzed. However, in agreement with the results in Table 5, highly significant differences among the abundances were found comparing summer and winter months. The value of X^2 found was 843.29 (critical value = 5.99, for 2 degrees of freedom, in agreement with SIEGEL, 1975). The highest values were obtained in the months of summer. In relation to Copepoda, the highest values of abundance were obtained in the months of summer only in surface and middle depth of water column; in deeper depths, the highest values of abundance were found in the winter. Cladocera and Rotifera were more abundant in summer months in all depths.

Table 3. Rs values and its associated probabilities, obtained from 18 samples by the Coefficient of Correlation of Spearman, to the temperature, pH, oxygen and conductivity measures.

Variables analized	Rs Values	Probabilities
Temperature x pH	-0.543	0.286
Temperature x oxygen	-0.371	0.468
Temperature x condutivity	-0.2	0.704
pH x oxygen	0.143	0.787
pH x condutivity	-0.371	0.468
Oxygen x condutivity	-0.543	0.266

Table 4. Rs values and its associated probabilities, obtained for 18 samples by the Coefficient of Correlation of Spearman, to the plankton fequency, Copepoda, Cladocera and Rotifera.

Zooplanktonic group	Rs Values	Probabilities
Copepoda x Cladocera	0.714	0.111
Copepoda x Rotifera	-0.086	0.872
Cladocera x Rotifera	-0.657	0.156

Table 5. X^2 values, comparing the abundances of Copepoda, Cladocera and Rotifera in the winter and summer months, considering values in the surface, middle depth and deep depth of the water column (18 samples).

Zooplanktonic group	X2 values
Copepoda	1393,27*
Cladocera	8,38*
Rotifera	99,56*

The results of Canonical Correspondence Analysis, between environmental and biological variables, show that the species and the points (samples) are clustered according to the temperature (F=3.59; p=0.0059*), oxygen (F=1.322; p=0.2363), conductivity (F=0.812; p=0.5264) and pH (F=0.901; p=0.4527) (Fig. 5). Only temperature was statistically significant. However, when four environmental variables are analyzed together, the result explains 33.5% of the variance in the abundance of the species of Copepoda (Ó unconstrained eigenvalues/ Ó canonical eigenvalues = 0.80/0.239). The species *Notodiaptomus conifer*, *Notodiaptomus henseni* and *Ectocyclops ensifer* have the population favored with the increase of temperature, while the species *Thermocyclops minutus* and *Mesocyclops longisetus*, and the juveniles ones, Nauplii, Copepodite Calanoida and Copepodite Cyclopoida were favored with lower temperatures (Fig.5). Four of the samples in the deep depth (F) were placed in low oxygenate values positions, and the months (numbers) were positioned from June (06) to November (11) towards the temperature increase.

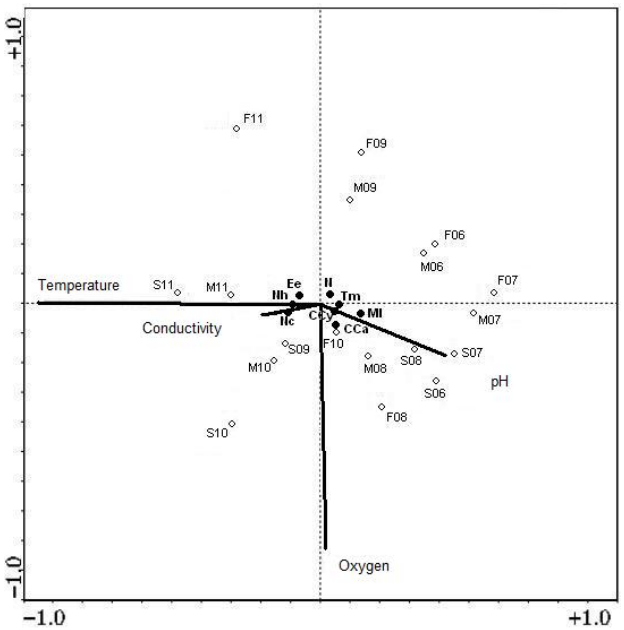

Figure 5. Ordination diagram obtained by the Canonical Correspondence Analysis (CCA) of 18 samples (S06 to F11. S = surface; M = middle depth; F = deep depth; the numbers represents the months) and of the eighth species (in bold; N = nauplii; CCa = Calanoida copepodite; CCy = Cyclopoida copepodite; Tm = *Termocyclops minutus*; Ee = *Eucyclops ensifer*; Nh = *Notodiaptomus henseni*; Nc = *Notodiaptomus conifer*; Ml = *Mesocyclops longisetus*). Environmental variables are represented by dark lines.

DISCUSSÃO

Artificial lakes lead to deep alterations in the affected ecosystems, the rivers. In geologic scale, all reservoirs constructed by human action still have its communities under impact. Therefore, the biological community of an artificial lake is involved on a particular period of the succession, where the major species persists for long time few adapted. In addition, they are constantly disturbed for sudden phenomena, as strong winds and storms (GIANI & FIGUEIREDO, 1999). In tropical ecosystems, the seasonal succession is expressive, and is characterized for temporal abiotic alterations associated with changes on the natural species, in each phase of the succession (HUTCHINSON, 1967).

Seasonal alterations in temperature affect many other water variables, such as density and viscosity, concentration of dissolved substances and other limnological features. Those variations, in consequence, can change the composition of the zooplanktonic community, and can also alter trophic relation among species, reproduction and other.

Beyond consisting the first registrations of the Copepoda fauna (five species of common occurrence in Brazil), and also the first recordings about Cladocera and Rotifera genus in the studied lake, this research demonstrated an important relation among this three main zooplanktonic groups. Despite of the non existence of significant statistical correlations among the zooplanktonic groups

analyzed in pairs, the graph delineated at Figure 4 suggests a temporal succession. Cladocera exerts a negative pressure on Rotifera, and Copepoda, a negative pressure on Cladocera. In the period between June and August, while cladocerans densities increased, the community of rotifers decreased, indicating a tendency to this possible relation. Besides, it is also observed that when the densities of Copepoda rised, from August to October, the densities of Cladocera decreased. That negative interaction of Cladocera stimulates a decrease in its pressure on Rotifera, which became to grow. Ecologically, those results could be a consequence of predation, exploitative competition or interference competition between the biological groups.

Discussions of Matsumura-Tundisi *et al.* (1990) reinforce the previous interpretation of predation for the relation between Copepoda and Cladocera, once *Mesocyclops* predation on *Ceriodaphnia cornuta* was evaluated in this work. Both organisms occured in the present study. However, the exploitative competition probably also may occur between Copepoda and Cladocera, once the genus *Notodiaptomus* are mainly filter feeders, like cladocerans.

The notion of predation is not satisfactorily applicable for the interaction between Cladocera and Rotifera. These liminic microcrustaceans filter small particles of the water through an inhalant feeding current, as well as Rotifera does. Because of this, the better interpretation for the relation between them is that of competition, exploitative or by interference. Studies of Gilbert (1988a; 1988b; 1989) and Burns & Gilbert (1986) about the daphnid negative effects on Rotifera communities corroborates the explanation of exploitative and interference competition for this ecological relation at the studied lake. According to these authors, these organisms competes for the same resource and at the same time, cladocerans damages and manipulates rotifers arrested on their feed chamber, causing them high mortality rates.

Concerning the behavioral changes, the increment of females, in general, favors the reproductive process of the species, like an adaptative strategy, elevating then the effective size of the population in a favorable phase of the succession. The great increments in abundance of the organisms at the present study were observed in the summer months for all the organisms, and it can be related to a reproductive and metabolic processes of the species, caused by the increase of temperature. Pinese *et al*. (2005) also verified that in Nova Ponte Reservoir, in high temperatures, the sexual ratio ($\frac{n° females}{n° males}$) of *Notodiaptomus iheringi* were higher than in lower temperatures.

The abiotic parameters analyzed in pairs were not significantly correlated to each other. Therefore, each factor probably affects the general condition of the environmental variables independently, and consequently, the biological communities are also affected like this. However, it is known that many physical and chemical variables of the water are linked to each other, and suit alterations in one causes alterations in all others (Esteves, 1998). The temperature is one of the most important abiotic variable of aquatic systems, being responsible for most changes in the seasonal patterns of a biological population, such as the reproductive boom and the feeding period. The seasonality of temperature was the factor that most affected the dynamics of Copepoda populations in the studied lake. Among the analyzed physical and chemical variables, the water temperature exerted the largest influence on aquatic communities. Because of this, all comparisons about abundance of the three zooplanktonic groups were statistically different in summer and winter.

Although the lack of statistical significance between the zooplankton communities and the other three variables analyzed (pH, dissolved oxygen and conductivity), it is probable that they influenced the spatial-temporal distribution of the species. The CCA multivariated analysis (that included temperature, pH, dissolved oxygen and conductivity) explained 33.5% of the variance in the abundance of the species of Copepoda in the lake. It is a high result, considering ecological data.

The vertical distribution of the zooplankton

communities in the water column, in general, have not followed a visible pattern, no being linked with abiotic data variations along the water column. This vertical distribution is common in plankton communities, but the instability of the communities on the lake could be responsible for this lack of pattern. Moreover, it must be considered that the studies did not approach samples throughout the entire day, but only once a day.

The proportion among zooplanktonic groups has been an approach widely used in descriptive studies of the plankton (HUTCHINSON, 1967). Depending on the structure of the community, it can be related to stress and impact situations, as eutrophication or water contamination (GUSMÃO *et al*., 2004). In contamined environments, communities tend to present organisms of smaller corporal size, like Rotifera. That happens, according to XU *et al*. (2001), because of the smaller the organism is, the higher is its tolerance to environmental stresses.

In a similar way, the prevalence of one zooplanktonic group over another can reflect the stability of the ecosystem. The unstable operation of hydrodynamic in reservoirs, due to the low water retention time and frequent disturbs, could favor the "*r* strategists" species, with short life cycle and high investment in reproduction, as rotifers in the case of zooplankton (MATSUMURA-TUNDISI, 1999). Because of this, in recent and unstable systems, the high species richness is mainly due to the Rotifera group (TUNDISI & MATSUMURA-TUNDISI, 1994). Rotifera and Copepoda Cyclopoida dominance in some studied lakes points to a situation of probable impact. In the present study, the prevalence of Copepoda Calanoida in the plankton characterizes the lake in Parque Municipal do Sabiá as low eutrophicated and low chemical stressed (LELAND & KENT, 1981; LAWRENCE & HOLOKA, 1987; TUNDISI *et al*., 1988). Therefore, several characteristics of the zooplanktonic community of this lake could be used as indicative of a good environmental condition. The proportion among main zooplanktonic organisms, with Copepoda overcoming Cladocera and Rotifera, revealed a mesotrophyc condition, as well as the condition of prevalence fo Copepoda Calanoida in relation to Cyclopoida.

Also, the proportion between young and adult Copepoda individuals was very high. This has been a pattern in tropical ecosystems, and represents a support to the local trophic cycles.

Despite a good environmental condition, this lake deserves a special attention in future studies due to its representation as an important ecosystem at a preserved area in the city, that is constantly threatened by its urban location. Persistent and long-term evaluations of the biotic communities of the lake are suggested, in order to better understand seasonal patterns, to control harmful alterations and to avoid irreversible losses of diversity for this region.

ACKNOWLEDGEMENTS

We thanks "Pró-Reitoria de Pesquisa e Pós Graduação" of Universidade Federal de Uberlândia, for financial support. Also, we sincere thanks to José Fernando Pinese Júnior, for the aid with photographs and images.

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Recebido: 13/09/2007
Revisado: 21/03/2008
Aceito: 28/04/2008