

CARBON PRODUCTION AND CONSUMPTION OF THE PLANCTONIC COMMUNITY FROM PAMPULHA RESERVOIR

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The knowledge of the metabolism of carbon production and consumption in a given ecosystem is important for the comprehension of its dynamics. In spite of the fact that a large literature exists concerning primary production in tropical lakes, just few studies have investigated zooplankton community respiration simultaneously with primary production. Having this information, it is possible to estimate the role of the phytoplankton and/or microbial loop as food supply for the zooplankton. Therefore, this study had the objective to collect and compare results about primary and secondary productions of Pampulha Reservoir.

The water for phytoplankton incubation was collected with a Kemmerer sampler and zooplankton was collected by vertical nets hauls (3,0 m, 90 μ m mesh size). Organisms were immediately transferred to a thermos flask and transported to the laboratory within 30 minutes. Different concentrations of zooplankton (160 μ m) were used under controlled conditions of light and temperature. At the end of the experiment, biomass, specific respiration rates were determined. Liquid secondary production and assimilation rates were estimated from respiratory rate according to Pourriot & Champ (1982). In other experiment, phytoplankton primary production was determined according to the method of oxygen production (Gaarder & Gran, 1927)

The table bellow shows that gross primary production of algae (PPB) always exhibited high figures. The net primary production (PPL) was, however, negative in some cases. Assimilation (ASS) as well net production (PSL) values of zooplankton also remained very high.

| Date | PPB | PPL | PSL | ASS |
|-----------------|-------|--------|--------|--------|
| 13 July 1992 | 0.040 | 0.030 | 0.0020 | 0.0060 |
| 10 May 1993 | 0.021 | -0.003 | 0.0010 | 0.0030 |
| 29 October 1993 | 0.031 | 0.004 | 0.0002 | 0.0005 |

Obs: all values are in mgC/l.h.

In some occasions (e.g. 10 May 1993), it is evident that primary production of phytoplankton can not support the energetic demand of mesozooplankton. This deficit may be an indication of the importance of microbial loop as food resource for zooplankton in Pampulha Reservoir.

REFERENCES

- Gaarder, T. and Gran, H.H. 1927. Investigations on the production of plankton in the Oslo fjord. *Rapp. P. V. Reun., Cons. Int. Explor. Mer.*, 42:3-48.
- Pourriot, R. et Champ, P. 1982. Méthodes d'estimation de la production secondaire planctonique. In R. Pourriot (eds.), *Écologie du plancton des eaux continentales*. Masson, Paris.