



EVALUATION OF CONCENTRATIONS OF HEAVY METALS AND CONTAMINANTS IN THE WATER USED BY WATERBIRDS IN THE TIETÊ ECOLOGICAL PARK, SÃO PAULO, BRAZIL.

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INTRODUCTION

Studies investigating the contamination of wetlands for industrial effluent guidelines provide subsidy for conservation and grounded the handlings to decrease the environmental impacts caused by the urbanization process. Considering the trend of the aquatic organisms accumulate toxic compounds in your tissues, is of all important monitor the presence and concentration of them in the environment, because even at very low levels in the water column introduce high risk of contamination in the trophic chain (Widdows and Donkin, 1992; Skurihin, 1989). Argel-de-Oliveira (1995), proposed that data surveys were done to determine in what form the process of urbanization affects the birdlife. The birds are considered in some studies as bioindicators of environmental quality, as accumulate heavy metals in their tissues and wings. Despite easily adapt the changes of the environment, some species quickly disappear when occurs any environmental alteration (Regalado and Silva, 1997; Furtado *et al*, 2007). Therefore, is of all importance that a first monitoring of water quality in large and small cities.

OBJECTIVE

The objective of this study was to lift information regarding the presence and concentration of heavy metals in water, searching better understanding and characterization of this area for provide subsidy on community conservation of waterbirds.

MATHODOLOGY

Study Area: The study was performed in a wetland in Tietê Ecological Park in São Paulo, SP. The area is located in the park region of greatest contact with the Rio Tietê, this area is seasonally waterlogged alternating water level present in it according to the precipitation in São Paulo, where the same receives sediments coming of floods and the process of desilting the river.

Collection of samples and analytical methodology: Samples were collected monthly, simple and punctual (Tundisi and Tundisi, 2008), in the period what understand October 2012 to March 2013. In each sample we collected two liters of water, according to the procedures of collection, sterilization and conservation of sample. Were analyzed the concentrations of Al, Cl₂, Cd, Pb, Cr, Cu, Hg, Ni, Fe, P and Zn according to the present analytical methodologies in the Standard Methods (APHA, 1998; Clesceri *et al*, 2005). Analyses were performed in laboratories and environmental Labortechnic technology and Criare-Lab consultancy laboratory.

RESULTS

Observed that some metals presented concentrations exceed the maximum rate allowed by Resolution CONAMA 357/2005. Being they Al (32,060 mg/L), Pb (0,042 mg/L), Cu (0,04 mg/L), Ni (0,05 mg/L), Fe (25,80 mg/L) e P (2,57 mg/L). The parameters Cl₂, Cd, Cr, Hg e o Zn were within the range preconized by current legislation in all samples.

DISCUSSION

Results similar to the present study were found by some authors who have developed studies in watersheds, lakes and water bodies in urbanized regions (Ferreira *et al*, 2010; Furtado *et al*, 2007; Santana and Barroncas, 2007). Despite de Cl₂, Cd, Cr, Hg e o Zn were within the range preconized by Resolution CONAMA 357/2005, need to be monitoring, because even in small quantities bring harmful effects to health of the ecosystem as well as carry a high capacity to bioaccumulate along the trophic chain (Ferreira *et al*, 2010; Furtado *et al*, 2007). The mercury is highly dangerous because of its potential of biomagnification, can cause damage to the central nervous system of organisms (Ferreira *et al*, 2010). For the birds this is an extremely worrying fator, because may affect the balance taking to impairment of flight activity. Furthermore, when associated with the organochlorine compounds may interfere with formation of the shell eggs that pass to hatch before maturation of individuals, taking to possible decrease of the community and possible local and partial extinction of sensitive species in this environment (Siciliano *et al*, 2005; Furtado *et al*, 2007). Furthermore, the high indices of phosphorus demonstrated the condition of eutrophication of water of the Tietê Ecological Park.

CONCLUSION

Considering the conditions of the surroundings we can observe that contamination is not just local, but the ecosystem, where the metals present in the water can be biomagnificados along the trophic chain and consequently compromise the structure and dynamics of this community. A next step would be to monitor the seasonal variation of the concentration of these metals and contaminants, and check their presence in the tissues and eggs of some species of birds.

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THANKFULNESS

We thank the laboratory Criare-Lab by the support research.