On the first record of the exotic *Moina macrocopa* (Straus, 1820) in Minas Gerais State, Brazil

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(With 8 figures)

Sampling at Pampulha Reservoir in Minas Gerais State in August of 2012 found *Moina macrocopa,* until now reported for South America only in a temporary pond in Rio de Janeiro State, Brazil (Elmoor-Loureiro et al., 2010) and similar environments in South America (Valdivia-Villar, 1988; Elias-Gutiérrez and Zamuriano-Claros, 1994; Paggi, 1997). The most recent inventory (checklist) of cladocerans for Minas Gerais State (Santos-Wisniewski et al., 2011) did not mention this species, indicating recent appearance.

Pampulha Reservoir is a eutrophic medium-sized reservoir with an area of 1.82km^2 and mean depth of 5.0m (Bezerra-Neto and Pinto-Coelho, 2010), corresponding to the depth of the sampling site (Figure 1). Recent studies on this reservoir (Pinto-Coelho, 1998; Jaramillo and Pinto-Coelho, 2011) have reported *Moina micrura* among the Moinidae. In August of 2012, specimens of *Moina macrocopa* were also found in the central compartment of the reservoir, representing around 1% of the cladocerans. Samplings carried out in 2013, showed fluctuations in its numerical densities, with an increase in April (13% of total cladocerans) and reduction in May and June (0.03% in both months), suggesting an initial colonisation process for the species.

The morphological features of the specimens (Figures 2-8) are similar to the ones described by Goulden (1968) for *Moina macrocopa* of the Old World, differing only in the number of setae on the ventral rim, from 70 to 77, close to what was described by Paggi (1997) and Elmoor-Loureiro et al. (2010). The mean female and male lengths correspond to 1.14 ± 0.06mm (1.05-1.20mm; n=10) and 0.92 ± 0.05mm (0.85-0.97mm; n=4). Ephippia were not found in females from the reservoir nor in attempts to induce their production in the laboratory.

The studied environment corresponds with habitat descriptions of Moinidae, especially with regard to *M. macrocopa*, found mostly in temporary, shallow and/or eutrophic environments (Paggi, 1997; Thorp and Covich, 2001; Petrusek, 2002). Laboratory experiments conducted with field and culture water at 25°C have shown high reproduction and rapid turnover for this species (unpublished data). Mean fecundity of field and culture water treatments corresponded, respectively, to 37.0 ± 6.8 (26-44) and 120.6 ± 48.3 (55-203) neonates, and primiparous individuals were found within less than 3 days. This signifies very high reproductive ability, suggesting a high level of competitiveness if other pelagic cladocerans are kept in low densities.

Representatives of Moinidae are considered ruderal species (Romanovsky, 1985), showing high biotic potential but with a need for high food concentrations, being preferably found in productive or disturbed environments. Maia-Barbosa and Bozelli (2006), studying a lake impacted by bauxite (Lake Batata, Pará State, Brazil), found *Moina minuta* in abundance, especially in periods with higher amounts of organic detritus and algae attached to bauxite tailings.

On the other hand, Pampulha reservoir, besides being eutrophic, is highly contaminated by industrial effluents. Comparative sensitivity tests using NaCl conducted in the laboratory showed CE50 values of 1.0mg.L^{-1} and 1.7mg.L^{-1} for *M. macrocopa* and *D. similis*, respectively, indicating that *M. macrocopa* may be more sensitive than other cladocerans.

Other studies related to cladocerans introduced into lakes and reservoirs have discussed the factors involved in the establishment of daphnids. *Daphnia lumholtzi*, introduced into lakes of North America (Work and Gophen, 1999; Dzialowski et al., 2000), as well as into lakes and reservoirs of Brazil (Zanata et al., 2003; Simões et al., 2009), has been favoured in oligo-mesotrophic environments, with higher temperatures (subtropical environments) and low densities of potential competitors.

Biological invasions have been considered one of the main causes of biodiversity loss (Wittenberg and Cock, 2001; Simberloff, 2003). The presence of *Moina macrocopa* in the Pampulha Reservoir is of concern, not only because it is an opportunistic species but also with regard to environmental connectivity and dispersion possibilities (Rocha et al., 2005). A subject for future investigations should certainly be whether *M. macrocopa* establishes itself and succeeds in this and other reservoirs.

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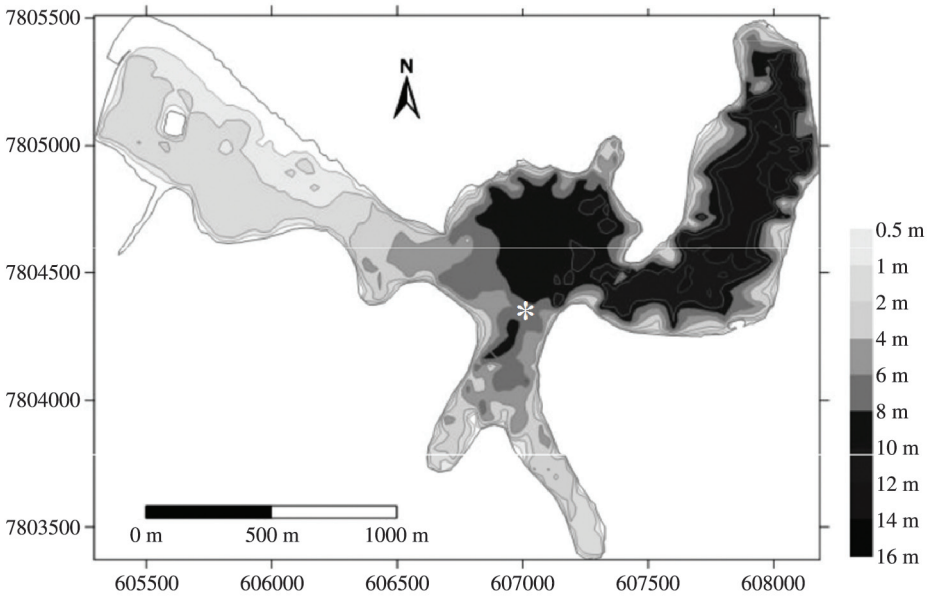
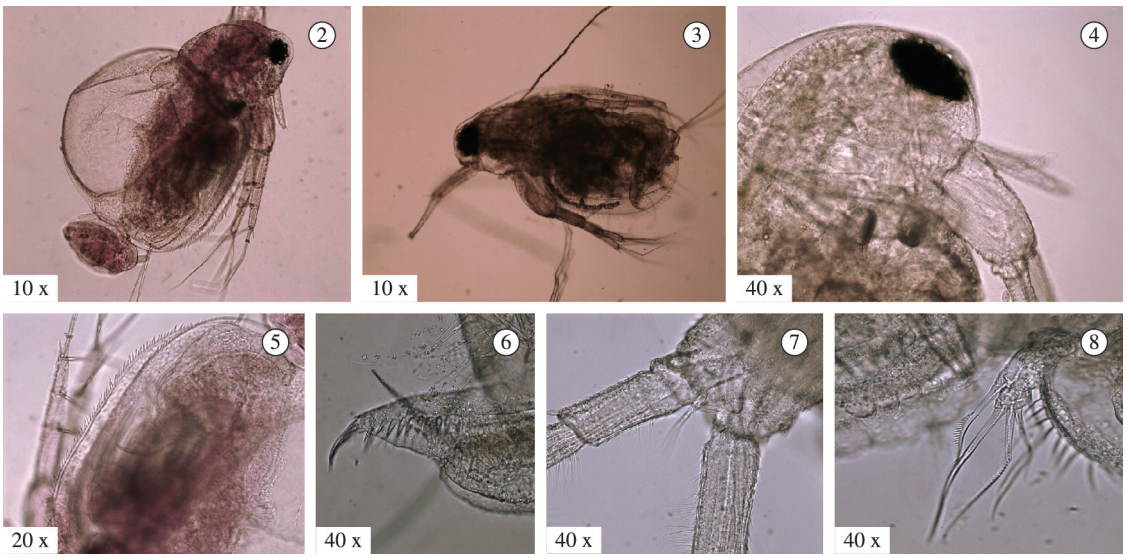


Figure 1. Bathymetry of Pampulha reservoir and sampling site of the present study (*) adapted from Bezerra-Neto and Pinto-Coelho (2010).



Figures 2-8. *Moina macrocopa* from Pampulha reservoir in Belo Horizonte, Minas Gerais state. 2) parthenogenetic female; 3) male; 4) detail of *hairs* on the head; 5) seta on the ventral margin; 6) postabdomen; 7) basal segment of antenna ramus; 8) first trunk limb, detailing the toothed setae of the penultimate segment and two terminal seta.

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