

Impact of Lined and Unlined Water Bodies on the Distribution and Abundance of Fresh Water Snails in Certain Governorates in Egypt

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Abstract : Effect of lining watercourses on the distribution and abundance of fresh water snails at two Egyptian governorates, Baheria (new reclaimed area) and Giza was studied. Seasonal survey in lined and unlined sites during two successive years was carried out. Samples of snails and water were collected from each examined site and the ecological conditions were recorded. The collected snails from each site were placed in plastic aquaria and transferred to the laboratory, where they were sorted out, identified, counted and examined for natural infection. The size frequency distribution was calculated for each snail species. Results revealed that snails were represented in all examined watercourses (lined and unlined) at the two tested habitats by 14 species. (*Biomphalaria alexandrina*, *B. glabrata*, *Bulinus truncatus*, *Physa acuta*, *Helisoma duryi*, *Lymnaea natalensis*, *Planorbis planorbis*, *Cleopatra bulimoids*, *Lanistes carinatus*, *Bellamyia unicolor*, *Melanoides tuberculata*, *Theodoxus nilotica*, *Succinia cleopatra* and *Gabbiella senaarensis*). During spring, the percentage of live (45%) and dead (55%) snail species was extremely highly significant lower ($p > 0.001$) in lined water bodies compared to the unlined ones (93.5% and 6.5%, respectively) in the examined sites at Baheria. At Giza, the percentage values of live snail species from all lined watercourses (82.6% and 60.2%, during winter and spring, respectively) was significantly lower ($p > 0.05$ & $p > 0.01$) than those in unlined ones (91.1% and 79%, respectively). Size frequency distribution of snails collected from the lined and unlined water bodies at Baheria and Giza governorates during all seasons revealed that during survey, snail populations were stable and the recruitment of young to adult was continuing for some species, where the recruits were observed with adults. However, there was no sign of small snails occurrence in case of *B. glabrata* and *B. alexandrina* during autumn, winter and spring and disappear during summer at Giza. Meanwhile they completely absent during all seasons at Baheria Governorate. Chemical analysis of some heavy metals of water samples collected from lined and unlined sites from Baheria and Giza governorates during autumn, winter and spring were approximately as the same in both lined and unlined water bodies. However, Zn and Fe were higher in lined sites (0.78 ± 0.37 and 17.4 ± 4.3 , respectively) than that of unlined ones (0.4 ± 0.1 and 10.95 ± 1.93 , respectively) and Cu was absent in both lined and unlined sites during summer at Baheria governorate. At Giza, Cu and Pb were absent and Fe were higher in lined sites (4.7 ± 4.2) than that of unlined ones (2.5 ± 1.4) during summer. Statistical analysis showed that no significant difference in all physico-chemical parameters of water in lined and unlined water bodies at the two tested habitats during all seasons. However, it was found that the water conductivity and TDS showed a lower mean values in lined sites than those of unlined ones. Thus, the present obtained data support the concept of utilizing environmental modification such as lining of water courses to help in minimizing the population density of certain vector snails and consequently reduce the transmission of snails born diseases.

Keywords : lining, fresh water, snails, watercourses

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