

ABSTRACT

As urban areas continue to expand rapidly and replace natural landscapes, the ability to conserve and manage native wildlife within urban environments is becoming increasingly important. As anthropogenic activities increase in these areas, there is a marked increase in levels of pollution which impacts both the terrestrial and aquatic ecosystems. Although some elements in the environment such as minerals and other compounds are necessary for animal and plant growth and metabolism, they can all be toxic at elevated levels, leading to severe health effects which could be fatal. Some aquatic organisms can bioaccumulate many heavy metals and transfer them to consumers higher in the food chain, which exposes them to significant health risks. The present study aimed to use non-invasive sampling techniques in order to assess the potential risk of the bioaccumulation of heavy metals in the freshwater rivers of Gauteng through the food chain of otters. This study was conducted along the Hennops River and the Klip River, focusing on the two otter species in Gauteng, the *Aonyx capensis* and *Lutra maculicallis*. The nature and concentrations of contamination were assessed at four different levels of the otters' food chain - water (ingested by prey species), sediment (contaminants may accumulate here and be released into the water), crab (ingested by the otter) and scat samples (eliminated by the otter). The heavy metals which were analysed throughout this study included lead, mercury, titanium, uranium and arsenic. Heavy metal analysis showed that there may be potential for arsenic and mercury to bioaccumulate through the otter's food chain as these heavy metals were detected at lower concentrations in the otter's scat than in its food source, suggesting a high risk for the otter as these contaminants are not being eliminated from the otter. In addition to the accumulation of these metals, titanium and uranium also showed potential for bioaccumulation as the physical variables of the water quality indicated favourable conditions for potential bioaccumulation. The present study demonstrates the concentrations of the contaminants present in the Gauteng rivers and to what extent they may accumulate through the food chain of otters and pose serious health risks to the species. The potential risks to the otter species occurring throughout Gauteng are not fully understood. It is therefore suggested that future studies continue to focus on determining the potential risk of accumulation and health effects of freshwater contaminants for all rivers in Gauteng in order to further encourage the conservation of the otter species.

KEYWORDS:

Aonyx capensis, Bioaccumulation, Contaminants, Heavy Metals, *Lutra maculicollis*, Peri-Urban, Urban.