

Spatial distribution of intermediate hosts of *Fasciola* from selected localities in four provinces of South Africa

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Freshwater snails play a significant role in complex ecological interactions by acting as bioindicators of water quality, invasive species and intermediate hosts of multiple trematode species. Despite the role that freshwater snails play in the aquatic ecology and epidemiology of diseases, their biology and ecology is still not fully understood. The aim of the study was to determine the spatial distribution and habitat preference of Lymnaeidae species, and further to detect patent *Fasciola* infections in these snails. A survey of freshwater snails was conducted in 22 habitats across Limpopo, Gauteng, Mpumalanga and KwaZulu-Natal provinces. Snails were collected through scooping and/or hand picking. Snails were distinguished in situ based on shell morphology, followed by exposing them to light to shed cercariae (life-cycle stage). Identity of snails and trematodes were confirmed using CO1 and 16S, and ITS-2 and ITS-1 primers, respectively. Results showed that freshwater snails were present in 14 of 22 surveyed sites. Of these, intermediate hosts of *Fasciola* species, identified as *Pseudosuccinea columella* and *Radix natalensis*, were collected from seven sites in Limpopo, Gauteng and Mpumalanga. *Pseudosuccinea columella* was found in three provinces and seems to prefer dams to rivers and streams. *Radix natalensis* was only found in Mpumalanga and Limpopo and were collected in rivers and dams. Other snail species identified include Planorbidae (*Biomphalaria pfeifferi*, *Bulinus globosus*, *B. tropicus*, *B. natalensis*, *Gyraulus connollyi*), Physidae (*Physella acuta*) and Thiaridae (*Tarebia granifera*, *Melanoides tuberculata*). There was also observed co-habitation between the lymnaeids and planorbids in Limpopo, and lymnaeids, thiarids and planorbids in Mpumalanga. This study provides insight on the occurrence of lymnaeid snails and other freshwater snail species that co-exist and interact with them, their spatial distribution and ecological preferences. Furthermore, it provides awareness on the trematodes that the snail species can potentially transmit to animals and humans in South Africa.

Keywords: lymnaeids, *Fasciola*, distribution, identification, habitats, South Africa