

## OCCURRENCE AND DISTRIBUTION OF FRESHWATER SNAILS IN THREE COMMUNITIES IN EKITI STATE

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### ABSTRACT

Schisto somiasis continues to be one of the most important and widespread neglected tropical disease that occurs in Nigeria. The distribution of the disease is determined by the presence of freshwater snail species which serve as intermediate hosts for the disease. Freshwater snails had been known to occur in streams in Ekiti State, Nigeria. This work was initiated with the objective to examine the distribution of freshwater snails in streams at three different communities in Ekiti State. Freshwater snails were collected at different points of the streams found in the three communities. Method of collection of the freshwater snails includes the use of scoop net and manual picking. Results showed that various species of freshwater snails including *Potadomamoerchi*, *Lanisteslibycus*, *Bulinus globosus* were found in all the three communities and *Bellamyia unicolor* were only found in one of the three communities. Among the three freshwater snails found in all the communities *Potadomamoerchi* were the most abundant (45.8%), followed by *Lanistes libycus*(30.8%) and the least were the *Bulinus globosus*(18.0%). *Bellamyia unicolor*(5.4%) were found only in one of the three communities. Some of the species of these freshwater snails had been reported to serve as intermediate hosts for *Schistosoma* indicating that these communities could be prone to schistosomiasis.

**Keywords:** Schistosomiasis, *Schistosoma*, freshwater snails, Ekiti State, occurrence, distribution

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## INTRODUCTION

Snails have a wide range of importance to humans both economically and medically. A sizeable number, especially the aquatic forms of freshwater snails in tropical freshwater are known to be inevitable agents of trematode diseases of man and his domestic animals (Cowper, 1959; Brown, 1994). *Schistosoma* species that causes schistosomiasis uses several species of freshwater snails as intermediate hosts. In Nigeria, schistosomiasis is a disease of considerable and growing importance due to inadequate portable water and activities related to water resource development schemes for irrigation, fishing, and hydro-electricity (Ofoefie, 2002). Human infection with *Schistosoma haematobium* has been reported in several areas in Nigeria (Adewole et al., 2001; Olofintoye, 2004; Ugbomoiko, 2004; Owojori et al., 2006). In Ekiti state, the status of urinary schistosomiasis has been well documented including studies on prevalence, pathology and epidemiology (Ologunde, 2009). Identifying the species and distribution of freshwater snails is important in identifying areas that may be prone to the occurrence of schistosomiasis. This work was therefore initiated with the objectives to find out the occurrence and distribution of freshwater snails in some streams in three communities in Ekiti State. The communities are Ifaki-Ekiti, Iworoko-Ekiti and Are-Ekiti.

## Materials and method

**Study areas:** The study areas are Ifaki-Ekiti, Iworoko-Ekiti and Are-Ekiti which located at the centre of Ekiti State. Ekiti State is

Situated in the southwestern part of Nigeria. The State enjoys tropical climate with two distinct seasons, rainy season (April to October) dry season (November to March). The annual rainfall is about 1150mm. The study was carried out in three streams at Ifaki-Ekiti. The names of the streams are Omi Pupa, Arototo and Owase. Three streams were also investigated at Iworoko-Ekiti and the names are Asipa, Omi Afeni, and Omosuo. But only one stream was investigated at Are-Ekiti and the stream is called Are-Afao stream. Each of the streams was divided into different stations. Each station was randomly sampled for snails using a long-handled scoop-net. Snail sampling was carried out for each of the designated spots in each of the streams. From each spot six passes of the scoop were taken across each semi-circular curve and dragging along on-shore direction. Freshwater snails that were found attached to the marginal edges and soil surface were handpicked. Snails that were found were transported to the laboratory in pre-labelled plastic containers containing damp and decaying leaves, covered with perforated lids. The snails were sorted and identified to species.

## Results

The number and species of freshwater snails found in the different streams in the three communities are shown in Tables 1. In all the seven streams examined; eight hundred and forty (840) freshwater snails were collected. The species of freshwater snails collected were *Potadomamoerchi*

385 (45.8%), *Lanistes libycus* 259 (30.8%) and *Bulinus globosus* 151 (18.0%) in all the streams from the three communities.

*Bellamyia unicolor* 45 (5.4%) were found only in Are-Afao stream.

**Table 1.** Freshwater snails collected from seven streams in the three communities in Ekiti State, Nigeria.

Community	Name of the Stream	<i>Potadoma moerchi</i>	<i>Lanistes libycus</i>	<i>Bulinus globosus</i>	<i>Bellamyia unicolor</i>	Total
Ifaki-Ekiti	Omi Pupa	55	45	20	-	120
	Arototo	44	40	14	-	98
	Owase	49	35	18	-	102
Iworoko-Ekiti	Asipa	74	33	17	-	124
	Omi Afeni	65	58	15	-	138
	Omosuo	48	13	27	-	88
Are-Ekiti	Are-Afao	50	35	40	45	170
Total		385 (45.8%)	259 (30.8%)	151 (18.0%)	45 (5.4%)	840 (100%)

## DISCUSSION

This study has identified a total of three freshwater snail species namely *P. moerchi*, and *Lanistes libycus* and *B. globosus*, in all the six streams investigated at Ifaki-Ekiti and Iworoko-Ekiti (Table 1) and a total of four snail species namely *P. moerchi*, *Lanistes libycus*, *B. globosus* and *Bellamyia unicolor* at Are Afao stream. These freshwater snails coexisted together in these habitats. Barclay (1958) indicated that stable coexistence of freshwater snails in habitats is capable of supporting mutually exclusive and conducive niches for different species population. *Bulinus*

*globosus* being present in the water bodies was of epidemiological significance considering the intense water contact activities at the various points. *Bulinus globosus* are known intermediate hosts of *Schistosoma haematobium* in Nigeria (Adewunmi et al., 1990). The abundance of *Bulinus globosus* in all the streams could be expected. Olofintoye, (2001); Odaibo et al. (2004); Olofintoye (2005) reported the presence of *Bulinus globosus* in different freshwater habitats in Ekiti State. *P. moerchi* and *L. libycus* are not natural vectors of human schistosome species. However, *P. moerchi* had been reported to harbor schistosome sporocysts (Agbolade and

Agu, 2013). In their study, Agbolade and Agu (2013) observed schistosomes sporocysts in one of the *P. moerchi* that were examined and the sporocysts eventually produced cercariae. Cercariae from *P. moerchi*, was believed to cause swimmers itches in humans not only during snail collection but also during consumption if the freshwater snails are not properly cooked (Agbolade and Agu, 2013). *L. libycus* are known to be edible (Omudu and Achagh, 2005), but trematode cercariae had been recorded to associate with the them (Agbolade *et al.*, 2005). Trematode cercariae had been reported to elicit cercarial itching in humans who collect both *L. Libycus* and *P. moerchi* for consumption (Agbolade and Odaibo, 2004; Agbolade *et al.*, 2004). *Potadoma* species have long been incriminated as vector of *Schistosoma* and *Paragonimus* in tropical Africa (Ukoli, 1984). Freshwater snails have become very important alternative source of animal protein as the price of the more traditional animal protein sources have risen above the reach of many inhabitants. These freshwater snails which are edible and medically important call for urgent awareness on the public health implications. The distribution and abundance of freshwater snails in the streams could be attributed to the availability of food, shelter and oviposition sites. *Bellamyia unicolor* are not known to serve as intermediate hosts for any parasites of medical importance.

## REFERENCES

- Adewole, S.O., Olofintoye, L.K. and Hassan, A.A.**, (2001). Schistosomiasis and *Schistosoma haematobium* infection among school children in Ikere-Ekiti, Ekiti State. *Afr. J. Sci.*, 3(3): 29-33.
- Adewunmi, C.O., Furu, P., Christensen, N.O., Marquis, .B. and Fagbola, M.** 1990. Endemicity and seasonality of transmission of human schistosomiasis in Ille-Ife southwestern Nigeria. *Trop. Med. Parasitol.*, 41: 443-444.
- Agbolade OM, Akinboye DO, Fajebe OT, Abolade OM, Adebambo AA** (2004). Human urinary schistosomiasis transmission foci and period in an endemic town of Ijebu North, Southwest Nigeria. *Trop. Biomed.* 21 (Suppl): 15-22.
- Agbolade OM, Akinboye DO, Fajebe OT, Abolade OM, Olateju TM** (2005). Population, seasonal abundance and infections of *Lanistes libycus* from a schistosomiasis-endemic town in Ijebu North, southwest Nigeria. *Niger. J. Parasitol.* 26: 37-41.
- Agbolade OM, Odaibo AB** (2004). Dockovdiacookarum infection and the prosobranch gastropod *Lanistes libycus* host in Omi Stream, Ago-Iwoye, southwestern Nigeria. *Afr. J. Biotechnol.* 3(3): 202-205.

**Agbolade, O. M. AND Agu, G. C.** (2013). Bacteria and schistosome parasite associated with cooked *Lanisteslibycus* and *Potadomamoerchif* from Ago-Iwoye, Southwestern Nigeria. *Basic Research Journal of Microbiology* Vol. 1(1) pp. 08-12 April 2013

**Barclay, G.W.** (1958). Techniques of population analysis. New York, John Wiley and Sons Inc., pp:311.

**Brown, D.S.** (1994). Freshwater Snails of Africa and Their Medical Importance. 2nd edition, London, Taylor and Francis, pp. 609.

**Cowper, S.G.** (1959). Notes on the snail vector of *Schistosomahaematobium* in the Ibadan area of Nigeria with some observations on the pathology of the liver and spleen in mice experimentally infected with *Schistosomahaematobium* and *Schistosomamansoni*. *West Afr. Med. J.*, 8: 191-196.

**Odaibo AB, Adewumi CO, Olorunmola FO, Ademoyin FB, Olofintoye LK, Adewumi TA, Ademilua MO, Awe CO' Akinyemi F** (2004). Preliminary studies on the prevalence and distribution of urinary Schistosomiasis in Ondo State, Nigeria. *Afr. J. Med. Sci.*, 33: 219-224.

**OFOEZIE, I. E.** (2002). Human health and sustainable water resources development in Nigeria: schistosomiasis in artificial lakes. *Natural Resources Forum*, 26: 150 – 160.

**Ologunde C.A.** (2009). Endemicity of urinary schistosomiasis in Ogbese-Ekiti

community of Ise-Orun Local Government Area of Ekiti State, Nigeria. *Pakistan Journal of Scientific and Industrial Research*. 52 (1); p. 28-31

**Olofintoye LK** (2001). Snail and human factors in the transmission of schistosomiasis in Ondo and Ekiti States. Ph.D Thesis University of Ibadan. 247 pp.

**Olofintoye L k** (2005): Frequency of Macrohaematuria and Geometric mean infection intensity of Schistosomiasis among school children in endemic areas of Ondo and Ekiti States, Niger. *J. Appl. Env. Sci.*, 1: 57-62.

**Olofintoye, L.K.** (2004) Urinary Schistosomiasis among Primary school children in Ado district of the Ado Ekiti State, Nigeria. *Journal of Biological and Physical Sciences*, 2:109.

**Omudu, Edward Agbo and Iyough Achagh.** (2005). Ecological studies of the gastropod fauna of some minor tributaries of River Benue in makurdi, Nigeria. *Animal Research International* (2005) 2(2): 306 – 310 .

**Owojori, O.J., Asaolu, S.O. and Ofoezie, I.E.** (2006). Ecology of Freshwater snail In Opa Reservoir and Research Farm Ponds at ObafemiAwolowo University Ile-Ife, Nigeria. *J. Appl. Sci.*, 6(15): 3004-3015.

**Ugbomoiko, U.S.** (2004). Seasonal patterns in water contact and transmission of *Schistosoma haematobium* infection in Ikpeshi, Edo State, Nigeria. *Nigerian J. Pure Appl. Sci.*, 19: 1560-1569.

**Ukoli FMA** (1984). Introduction to parasitology in Tropical Africa. John Wiley and Sons Ltd., Chichester.

