Record of the Non-indigenous Seminole Rams-Horn, *Planorbella duryi* (Wetherby, 1879) from South Karo River, India (Mollusca: Heterobranchia: Planorbidae)

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Abstract

During the malacological survey in the Dalma Wildlife Sanctuary and different regions of Saranda forests of Deccan peninsula in Jharkhand, an unusual Florida’s native freshwater mollusc Seminole Rams-Horn, *Planorbella duryi* from South Karo River was encountered. Earlier, this non-indigenous species was reported from the Godavari River in the Nasik district of Maharashtra state of India although there was confusion on the presence of *Planorbella scalaries* and *Planorbella duryi*. Occurrence of *P. duryi*, has been confirmed along with distribution, ecology, and probable dispersal hypothesis has been discussed.

Introduction

Planorbidae is the most diverse, species-rich limnic pulmonates among the freshwater gastropod occurring in a wide range of habitats viz. ponds, lake, pools and rivers (Pilsbry, 1934; Burch, 1982; Albrecht et al., 2007; Johnson et al., 2015). Globally, planorbids have been estimated to be approximately 350 species belonging to 40 genera (Baker, 1945; Hubendick, 1955). *Planorbella duryi*, a member of Planorbidae family is the most common, widespread, and abundant species native to North America, and has been spread over South Africa and South East Asian countries (Alexandrowicz, 2003; Seddon, 2011; Johnson et al., 2015). In India, 28 species of Planorbidae have been recorded of which two species viz. *P. duryi* and *P. scalaries* are subjected to taxonomic validations since Magare (2015) although mentioned these two species, but failed to explain properly their presence.

Material and Methods

The materials reported here were collected on 23rd April 2018 by the second author during the faunal diversity assessment study in Dalma Wildlife Sanctuary in Saranda Forests Division of Jharkhand state in India. Molluscan materials including the species under report were collected from submerged grasses and leaf litter with submerged aquatic debris in the Karo river, which is shallow and submerged aquatic vegetation that flows inside the Protected Area. The area is known for its mineral deposits, mining is active in the region and transportation is frequent. The
collected samples were examined in Mollusca section of Zoological Survey of India (ZSI), based on the shell characters and morphometric measurements (see Pilsbry, 1934; Burch, 1982; Thomson, 2004; Kittle & Portell, 2010), and after identification and confirmation, were deposited in the National Zoological Collection of India at ZSI, Kolkata.

Results

Systematics account:
Class GASTROPODA Cuvier, 1795
Superfamily LYMNIAEOIDEA Rafinesque, 1815
Family PLANORBIDAE Rafinesque, 1815
Subfamily PLANORBINAE Rafinesque, 1815
Genus Planorbella Haldeman, 1843

Planorbella duryi (Wetherby, 1879)
(Fig. 1)


Description: Shell small, sinistral, pale translucent in coloration, finely striated, spire low and depressed with flat-topped, the aperture not advanced beyond upper margin and presence of wide aperture. Plane of aperture nearly vertical when viewed from the side. Narrowly umbilicate, whorl 3-3.5.

Distribution: the species is native to North America, but is widely introduced in Europe, South Africa and Asian countries (Alexandrowicz, 2003; Seddon, 2011; Johnson et al, 2015). In India, this species has been reported from Godavari River of Dhule and Naski district in Maharashtra, however, taxonomic validity is in question (Magare, 2015).

Ecology and Co-occurrence of species:
Other freshwater mollusca along with P. duryi were recorded from the submerged vegetation in shallow areas at water depth of 1 to 1.5 m in the river Karo in Jharkhand (Fig. 2). P. duryi is known to accompany with other Planorbidae species viz. Indoplanorbis exustus (Deshayes, 1834). However, the existence of other species with P. duryi i.e. Radix rufescens (Gray, 1822) of the family Lymmaeidae, Melanoides tuberculata (Müller, 1774), Mieniplota scabra (Müller, 1774), and Tarebia granifera (Lamarck, 1816) of the family Thiareidae have also been reported during the present study.

Discussion

Despite the huge distance dispersal of the species (North America to India as indicated by Alexandrowicz (2003) and invasion upto Europe), there is possible ways of dispersal of such mollusca and in the present case as evident of P. duryi, (Brown, 1967; Van Bruggen, 1974; Paraense, 1976; Perera et al., 1984; Alexandrowicz, 2003; Mastranduono et al., 2011). Although the exact path of dispersal of P. duryi into the freshwater ecosystem in India is beyond the scope of

Figure 1. The shell shows the Dorsal (left), ventral (middle) and apical (right) view of the Planorbella duryi (Wetherby, 1879). (Scale: 1 mm)
investigation through the present study, the following possibility of invasion could be due to increasing in global trades through waterways, thus there is a chance of attachment/transportation with other materials through passenger and cargo ships (materials such as river sand, mineral, coal etc. import), attaching with the feathers of migratory birds (Rees, 1965; Gittenberger, 2012; van Leeuwen & van der Velde, 2012; Rusiecki & Rusiecka, 2013); through intentional human activities as in the case of invasion of giant African land snail, Lissachatina fulica (Férussac, 1821) in India (Sajan et al., 2018), and through aquarium and ornamental fish trade. Nevertheless, the details of population assessment and ecological value, as well as their impact to the native freshwater mollusca and associated organisms is required.

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References


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