



Short Communication

Invasion of giant African alien land snail *Lissachatina fulica* (Férussac, 1821) in Sagar Island of India

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Abstract

The extremely high reproductive capacity of *Lissachatina fulica* (Férussac, 1821) caused serious effect on the local biodiversity and acts as a serious pest for agriculture, forestry and hamper the livelihood. The *L. fulica* from its route invasion from Kolkata has spread upto Himalayan region of India. Although, river Hooghly acts as a barrier for inland species, *L. fulica* now reported from the Sagar Island, most probably could be through sea transport or by human. Proper management and action plan for eradicate or control the population of *L. fulica* from Sagar Island is necessary for controlling further blowout of this invasive species

Keywords: Conservation, Gastropoda, India, Invasive Alien Species, Mollusca, Native Biodiversity

The Invasive Alien Species (IAS) are known to be one of the most significant diverse cause of environmental change and depletion of native biodiversity in worldwide (McNeely *et al.*, 2001; Carlton 2001). The giant African snail *Lissachatina fulica* (Férussac, 1821), is a large land snail belongs to family Achatinidae and native to East Africa. This species has been categorised as one of the top 100 worst invasive alien species of the world (Lowe *et al.*, 2000). This species is spread over the tropical and sub-tropical region of the world (Fontanilla *et al.*, 2014). In India, it is believed to have been introduced by British malacologist, W. H. Benson, who brought a pair of *L. fulica* from Mauritius to Kolkata (= Calcutta) during the early 19th century (Naggs, 1997). The extremely high reproductive capacity of *L. fulica* caused serious effect on the local biodiversity of the region (Budha and Naggs, 2008; Russell *et al.*, 2017). The *L. fulica* also known to act as a serious pest for agriculture, forestry and hamper the livelihood of the region. The *L. fulica* from its route invasion from Kolkata has spread upto Himalayan landscape in the north and Western ghats in the south and even Andaman and Nicobar Islands, India

(Tripathy, pers. Observation, Payra, pers. comm.). It was observed that the fast proliferation of *L. fulica*, which was introduced in 1940s, was affecting the agriculture and horticulture crops and it is also be affecting forestry in Andaman Islands (Sivakumar, 2009). Later, two species of predatory snails such as *Euglandina rosea* and *Gonaxis quadrilateralis* were introduced from Hawaii to control *L. fulica* in Andamans but these predator snails now poses a serious threat to native land snails that occur in these islands but failed to control *L. fulica* (Sivakumar, 2009).

Sagar Island in the northern Bay of Bengal, located south of Kolkata in the mouth of river Hooghly, is part of Gangetic deltaic Sundarban and fall under 8B biogeographic province. The triangular shaped island is spread over 300 km² and surrounded by river Hooghly on three sides, and expose to Bay of Bengal (Rodgers and Panwar, 1988; Rodgers *et al.*, 2000). During the surveys in the Sagar Island, on 14th November 2017, two individual of *L. fulica* were recorded on planted Papaya tree *Carica papaya* in Kachubaria (21.85871 N, 88.14512 E) area of the Sagar Island (Figure 1). *L. fulica* is known to hamper the *Papaya* cultivation in the island. This was the first

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report of *L. fulica* from Sagar Island. Nevertheless, it was recorded from Sundarban Biosphere Reserve (Rao *et al.*, 1987; Dey, 2008) as well as from nearby mainland 24 Paraganas (South) in Canning and Baruipur region (Sanyal *et al.*, 2012).

This species was identified and confirmed based on the following shell characters *viz.* the large shell size, ovately conoid in shape, twice as high as it is broad, pale yellow in colour and brownish streak, whorl 8 and convex, aperture ovately elliptical, the columella broad and slightly curved, the Peristome thin and margins jointed by a thick callus (Figure 1).

Although, river Hooghly acts as a barrier for inland species, *L. fulica* seems to have enter into the Sagar Island through sea transport/passenger ferry or by human. From conservation point of views it is necessary to protect the native and endemic species from such worst effecting species of *L. fulica*. The loss to the agri-horticultural economy produced by this snail pest has engaged the attention of a number of scientists to find out an effective measure to control it. Biological control measures have not been very encouraging. Various attempts have been made by introducing predatory snails to check the giant snail population in Hawaii and Andaman Islands but have not been very successful (Sivakumar, 2009). Even then, the search for any controlling device, either chemical or biological still continues and one would wish that an effective measure is discovered early. Collection and destruction of the snails and their eggs has been reported to be effective in Guam, Hawaii, Japan and Sri Lanka, Australia, USA (Peterson, 1957; Mead, 1961; 1979; Olson, 1973; Colman, 1977; Raut and Barker, 2002) that may be tried in Sagar Island. Further, Metaldehyde, calcium arsenate and sodium chloride were used in early attempts to control *L. fulica* (Prasad *et al.*, 2004). Prasad *et al.*, (2004) found natural softwood cutting fences made of alligator apple (*Annona glabra*) acted as snail repellents to protect the nursery beds. These chemicals may be used to control the *L. fulica* from Sagar Island as it is seems to be at the earlier stage of spread.

A great risk is involved in ignoring the problem and allowing the snails to do harm to the plants in the mean

while. It would be wise, if people in the infested localities keep themselves engaged in collecting the snail either in active period or in aestivation or both by hand and destroying it. If this would be continued even for one year the snail population could be reduced considerably. Management/action plan for eradicate or control the population of *L. fulica* from Sagar Island is therefore recommended.



Figure 1. The *Lissachatina fulica* (Férussac, 1821) on *Carica papaya* tree at Kachubaria, Sagar Island. (Photo: SK).

Acknowledgement

The authors are grateful to Dr. Kailash Chandra, the Director, Zoological Survey of India, Kolkata for providing necessary facilities and encouragement for preparing the manuscript.

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