

Additional sighting of the invasive Purcell's Hunter Slug from Gangasagar, West Bengal, India

Slugs are gastropod molluscs that typically lack a prominent external shell or have a reduced one. They are part of the same biological group as snails. Some slugs can indeed be plant pests, especially those that feed on higher plants. Their feeding habits can result in defoliation, causing damage akin to caterpillars and other plant-damaging insects (Cowie et al. 2008). Human activities have unintentionally contributed to the spread of certain terrestrial slugs and snails beyond their natural ranges (Lakshmi & Edward 2010). Slugs and snails can thrive in new regions, often colonizing less disturbed areas. The economic impact and potential damage they cause may go unnoticed until their presence becomes more apparent, making early detection and management challenging (Hutchinson et al. 2014). The introduced exotic terrestrial slug, *Laevicaulis haroldi* Dundee, 1980 is a



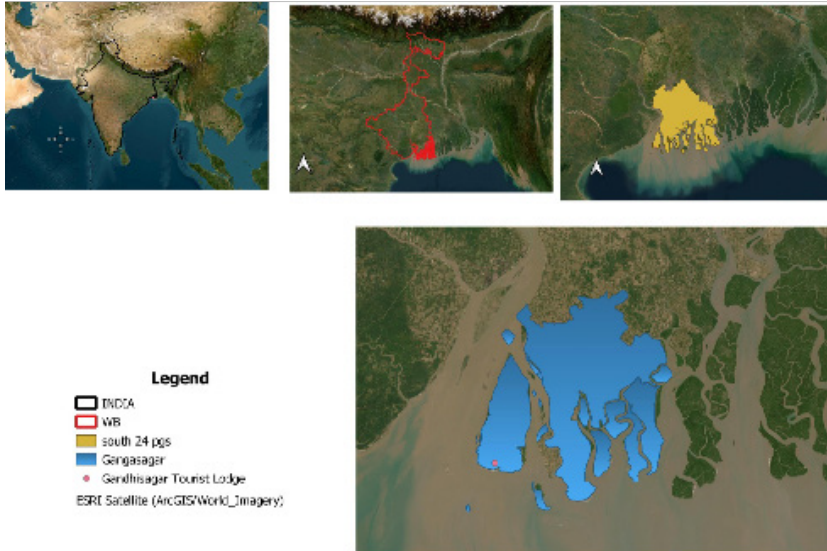
Purcell's Hunter Slug *Laevicaulis haroldi* Dundee, 1980 (Systellommatophora: Veronicellidae). © Md. Abu Imran Mallick.

serious crop pest and threat to the local species in most of the parts of India and is still spreading to many interior parts of the country (Sajan et al. 2018, 2021).

The Veronicellidae family, commonly known as leatherleaf slugs, consists of terrestrial herbivorous slugs found in tropical and

subtropical regions. Species like *L. haroldi*, known for its invasive and agriculturally damaging nature, stand out due to distinguishable external morphology (Khan 2019). However, identifying other members within this family to the species level can be challenging due to intra-specific variability, particularly in body colour

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Map of study area and recent distribution of *Laevicaulis haroldi* from Gangasagar, West Bengal.

and pigmentation patterns (Hutchinson et al. 2014; Khan 2019).

Laevicaulis haroldi, a horticulturally and agriculturally damaging invasive slug, was observed in the Gangasagar region during our survey in South 24 Parganas, West Bengal, India. The presence of such species in specific areas can have implications for local ecosystems and agriculture.

Systematic Account

Kingdom: Animalia
Phylum: Mollusca
Class: Gastropoda

Order: Systellommatophora
Family: Veronicellidae
Laevicaulis haroldi Dundee, 1980

Common names: Purcell's Hunter Slug, Caterpillar Slug

Study Area

The study area, Gangasagar, is situated at approximately 21.6417 N & 88.0756 E.

As one of the largest estuarine island systems at the confluence of the River Hooghly in the Sundarbans, it has a very low elevation. The central part of the Gangasagar ranges 2.22–2.23 m, while the peripheral portion is at an elevation of 2.18–2.22 m

(Chakraborty 1995). Its low elevation, particularly during cyclones and tide surges, the margins of Gangasagar Island are susceptible to inundation, the vulnerability of the area to extreme weather events (Gopinath & Seralathan 2005). The coastal zone of Gangasagar Island exhibits a diverse composition, comprising mudflats, salt marshes, and mangroves, along with sandy beaches and dunes. The western coast has a higher sand content, while the eastern side is characterized by a predominance of silt. Gangasagar Island, encompassing an area of approximately 282 km², serves as the western fringe of the Sundarbans Biosphere Reserve.

Observation

Laevicaulis haroldi was observed during an Indian Horseshoe Crab survey inside the Gangasagar Island, South 24 Parganas, West Bengal, India (21.6417 N, 88.0756 E). The survey was conducted in December 2023.

Species description

The upper part of *L. haroldi*

are creamy yellowish mantle with white lateral bands, blackish-brown ends, and the beige, narrow foot with distinct coloration on the unique appearance of these slugs. The upper brown tentacles with eye spots and translucent white lower tentacles add further nuances to their distinctive features (Dundee 1980; Sreeraj 2021). The observation that *L. haroldi* was found feeding on the leaves of shrubs belonging to the Ureicaceae family provides valuable insights into its ecological interactions and potential impact on plant species in the study area. Understanding the feeding habits of invasive species is crucial for assessing their ecological role and managing any potential negative effects on local flora.

Distribution

Laevicaulis haroldi is found in the base line of Satpuda mountains, extending from Maharashtra to Gujarat. The recorded habitats in Nasik, Dhule, Dehradun, Nandurbar, and Ahmedabad districts indicate their presence in varied regions (Magare 2015). *L. haroldi* has been widely reported across India, with sightings in Udaipur, Delhi, Kolkata, Mumbai, and Kancheepuram. The species continues to be present in Kolkata, West Bengal, with recent reports confirming its ongoing presence in this region (Sajan & Tripathy 2020). Their preference for marshy lands or areas around watersheds, especially in agricultural and horticultural lands, aligns with the observed concentration in the Sundarbans Biosphere Reserve around Gangasagar in West Bengal.

Discussion

The identification and documentation of rare species like *L. haroldi* carry significant ecological importance, particularly in the context of declining biodiversity. Human-induced environmental changes, habitat loss, and fragmentation can have detrimental effects on various species. Prioritizing ecology-based inventories, especially in un-surveyed areas with rich biodiversity, become crucial for understanding, conserving, and managing ecosystems.

Conservation Status

Laevicaulis haroldi is endemic to South Africa and holds the classification of being 'Endangered' on the global IUCN Red List. This indicates a heightened level of conservation concern for the species in its native range (Herbert 2013; Sajan & Tripathy 2020).

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