

## Biodiversity Record: The three-band garden slug, *Ambigolimax valentianus*, in Singapore

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**Recommended citation.** Yap EH & Tan SK (2021) Biodiversity Record: The three-band garden slug, *Ambigolimax valentianus*, in Singapore. Nature in Singapore, 14: e2021012. DOI: 10.26107/NIS-2021-0012

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**Subjects:** Three-band garden slug, *Ambigolimax valentianus* (Mollusca: Gastropoda: Limacidae).

**Subjects identified by:** Tan Siong Kiat.

**Location, date and time:** Singapore Island at two locations –

- 1) Singapore Botanic Gardens (SBG); 29 July 2020 at 1741 hrs, 13 August 2020 at 1726 hrs, 8 October 2020 at 1718 hrs, 7 December 2020 at 1647 hrs, and 8 December 2020 at 1330 hrs.
- 2) Gardens by the Bay; 4 January 2021, around 1300 hrs.

**Habitat:** Temperature-controlled glasshouses, maintained at around 18–24°C.

**Observers:** Yap Ee Hean (SBG) and Ali Abbas Alam (Gardens by the Bay).

**Observations:** This species of slug was first noticed on 29 July 2020 (Fig. 1a) inside a temperature-controlled glasshouse at the SBG. Six encounters, with presumably seven individuals, were recorded to date. The largest specimens were about 5 cm long when fully stretched. They were all found on plants, but no apparent plant damage attributable to the slugs was detected. An individual encountered on 7 December 2020 (Figs. 1b, 2) was collected and deposited as a voucher specimen (catalogued as ZRC.MOL.20723) in the Lee Kong Chian Natural History Museum at the National University of Singapore. On 4 January 2021, a slug, believed to be conspecific, was spotted at Gardens by the Bay in the Cloud Forest glasshouse (Fig. 1c).



Fig. 1. Live examples of *Ambigolimax valentianus* found in glasshouses in Singapore. a, first example at SBG on 29 July 2020; b, specimen at SBG on 7 December 2020; c, a possibly conspecific specimen from the Cloud Forest exhibit at Gardens by the Bay on 4 January 2021. (Photographs by: a, b: Yap Ee Hean; c: Ali Abbas Alam).

**Remarks:** All featured slugs are tentatively identified as *Ambigolimax valentianus* based on external morphology, colouration and patterns. The identification is provisional as external characteristics are often insufficient to distinguish this species from the congeneric *Ambigolimax nyctelius* and several other confamilial species (see Herbert, 1997; Barker, 1999; McDonnell et al., 2009; Vendetti et al., 2018). *Ambigolimax valentianus* is native to the Iberian Peninsula of Spain, but has been introduced to many other parts of the world, presumably via imported plants and soil containing eggs and juveniles (Ekin & Şeşen, 2018; and other references herein cited). The species is a known pest of ornamental

plants and crops, and has been documented to feed on algae growing on rocks, as well as fresh plants, fruits, tubers and even animal matter and fallen decaying leaves (Herbert, 1997; Udaka et al., 2007).

If correctly identified, this would be the first record of the species in the tropics, albeit thus far restricted to glasshouses maintained at cooler-than-ambient temperatures especially during the day. It is unknown if these slugs are able to survive or thrive in the tropical climate outside the glasshouses. The eggs of *Ambigolimax valentianus* have been shown to be quite susceptible to heat, with the optimum hatching temperature ranging from 15°C to 20°C, and hatching rates declining significantly at or above 29°C (Udaka et al., 2007).



Fig. 2. Dorsal view of live examples of *Ambigolimax valentianus* from SBG on 7 December 2020. The larger one (same individual shown curled in Fig. 1b), about 5 cm when fully stretched, was preserved as a voucher specimen. (Photograph by: Yap Ee Hean).

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