

Biodiversity Record: Apparent predation of snail, *Diplommatina nevillei*, by a *Diversibipalium* flatworm, with a note on living and juvenile snails

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Subjects: Nevill's diplommat snail, *Diplommatina nevillei* (Mollusca: Gastropoda: Diplommatinidae); Hammerhead flatworm, *Diversibipalium* sp. (Platyhelminthes: Tricladida: Geoplanidae: Bipaliinae).

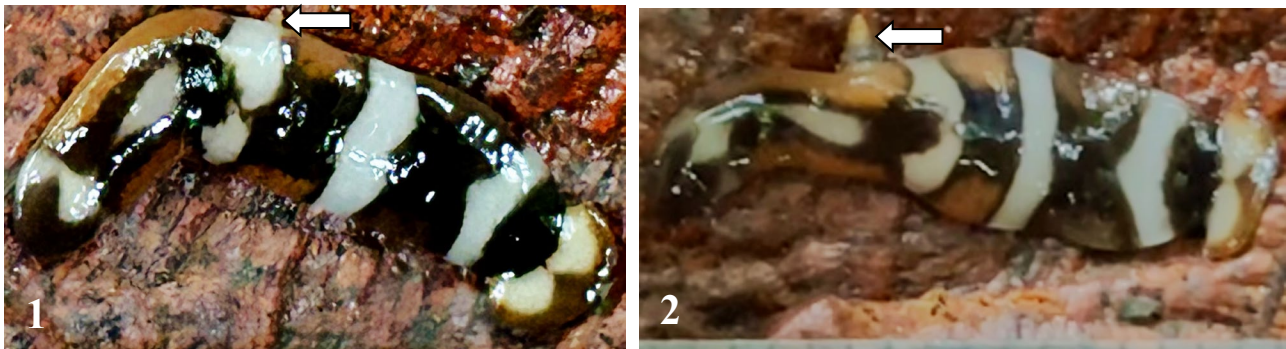
Subjects identified by: Chan Sow-Yan and Lau Wing Lup.

Location, date, and time: Singapore Island, Dairy Farm Nature Park, Wallace Trail; 3 July 2024; around 1211 hrs.

Habitat: Secondary forest. On the side of a pathway, among damp and decaying leaves, in the shade.

Observer: Lau Wing Lup.

Observation: About 19 living individuals of *Diplommatina nevillei* in varying growth stages were found grazing among leaf litter within an area the size of an A4 paper. One *Diplommatina nevillei* was apparently being eaten by a hammerhead flatworm of the genus *Diversibipalium* of about 16 mm. The shell was below the flatworm's proboscis (Figs. 1 & 2).



Figs 1 & 2. Dorsal view of a hammerhead flatworm apparently ingesting a *Diplommatina nevillei*. Arrow indicates the position of the predated snail at the proboscis of the flatworm (Photographs by: Lau Wing Lup).

Live juvenile *Diplommatina nevillei* (under 1.5 mm shell height) shells (Figs. 6 & 8) appear shiny and whitish, while adults (Figs. 7 & 9) appear dull, encrusted with organic debris and excrement, and ranges from orangey brown to yellowish white in colour. Juvenile shells are triangular, while matured specimens have a fusiform outline. The penultimate whorl is the widest in adult shells, while the last whorl is broadest for juvenile specimens, hence the triangular outline. Only adult shells have a thickened outer lip with double peristome. The umbilicus of the adult shell is closed whilst the umbilicus of juvenile specimens is open. There is a wide basal area surrounding the open umbilicus that is devoid of any axial ribs in juvenile specimens, whereas adult specimens have the ribs entering its imperforated umbilicus.

Regardless of the snail's age, the shell protoconch appears smooth, not ribbed, and has an orange tinge. The adult shell attains a height of about 2.5 mm, and has about six whorls, separated by well impressed sutures. Fine spiral striations are present on the later whorls. The axial ribs are rather straight, thick and relatively perpendicular to the coiling axis. The aperture is irregularly rounded with a prominent columellar tooth in matured specimens (Fig. 9). The snail's foot is short and white (Figs. 3–5). Black eye spots, surrounded by irregular blackish patches, are situated at the base of its light brown tentacles (Fig. 4). The circular operculum is thin and transparent (Fig. 5).



Fig. 3. Lateral view of an emerging snail.

Fig. 4. Lateral view of an emerged snail.

Fig. 5. Apertural view of an emerging snail showing the circular operculum (indicated by arrow).

Fig. 6. Dorsal view of a juvenile shell.

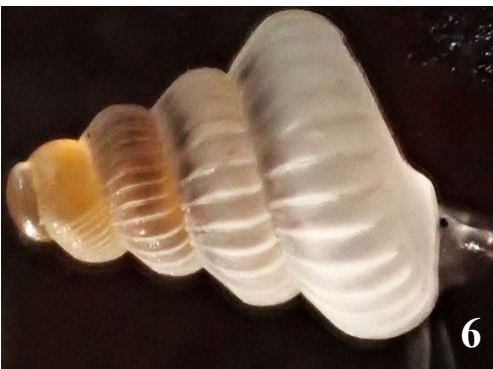
Fig. 7. Dorsal view of an adult shell.

Fig. 8. Aperture view of a juvenile shell.

Fig. 9. Aperture view of an adult shell with a prominent columellar tooth (indicated by arrow).

Space between black bars in the background of Figs. 7–9 is 1 mm.

(Photographs by: Lau Wing Lup).



Remarks: The position of the snail beneath the mid-section of the flatworm (see Figs. 1 & 2) strongly suggests that the former was being predated by the latter. As such this could be the first published local record of a *Diplommatina nevilli* being consumed by a terrestrial hammerhead flatworm. However, without an observation of the entire process, and in the absence of images recorded from beneath the flatworm, there is no actual evidence that the flatworm was ingesting the snail.

In Singapore, *Diplommatina nevilli* was first recorded by Tweedie (1967 as *Diplommatina canaliculata*), and subsequently by Lim (1969), Ho (1995), Tan & Chan (2009), Tan & Woo (2010) and Tan et al. (2012). Elsewhere, *Diplommatina nevilli* is known from Perak in Malaysia (Crosse, 1879 as *Palaina nevilli*; Phung et al., 2018), Java (van Benthem Jutting, 1941), Bali (Vermeulen & Whitten, 1998), northern Sumatra (Maassen, 2002) and Thailand (Panha & Burch, 2005). Live juvenile *Diplommatina nevilli* snails and shells are herein depicted for the first time in local literature (see Observation for description and comparison with the adult).

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