

New Guinea flatworm hunting a land slug

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Subjects: New Guinea flatworm, *Platydemus manokwari* (Platyhelminthes: Tricladida: Geoplanidae);
Land slug, cf. *Semperula maculata* (Mollusca: Gastropoda: Veronicellidae).

Subjects identified by: Author & Tan Siong Kiat.

Location, date and time: Singapore Island, Clementi Woods Park; 14 August 2017, 1900-2000 hrs.

Habitat: Urban parkland. At the grass edge of a concrete drain.

Observer: Author.

Observation: An example of the New Guinea flatworm, between 7 and 8 cm in length, was observed hunting a land slug of around 5 to 6 cm length. The flatworm tracked the slug by following the latter's slime trail. When it caught up with the slug, the flatworm crawled onto the dorsal surface of the latter from the slug's posterior end (Fig. 1). The flatworm crept along the back of the slug towards its head (Fig. 2 & 3). When the flatworm reached the slug's head end (Fig. 4), the latter retracts its eye stalks and exuded beads of slime (Fig. 5). Still on the slug's back, the flatworm proceeded to flatten out and broaden its body surface (Fig. 6) to wrap around the slug, which had by then become rigid (Fig. 7). The flatworm maintained its wrap around the slug for the next five minutes or so, until the observer poked at it. The flatworm then released its hold on the slug, which fell out curled, rigid and motionless (Fig. 8), appearing to have died.

Remarks: This non-native, predatory flatworm species has been documented in Singapore by Lim (2015) and Tan & Koh (2015). Predatory behaviour of flatworms includes locating prey, attack, capture with physical embrace; and feeding by extension of pharynx, (see Ogren, 1995). *Platydemys manokwari* has been observed preying on land snails and earthworms. It overpowers its prey by wrapping itself around the prey, and then proceeds to feed on it by inserting its pharynx on its ventral surface into the prey's body and releasing copious amounts of digestive fluid (Sugiura, 2010).

The behaviour illustrated in the attached series of images is typical of *Platydemus manokwari*. Because the present event was seen from above the subjects, the insertion of the pharynx could not be observed, but is assumed to have occurred as soon as the flatworm had wrapped itself around the slug. It is likely that the slug was killed by the digestive fluid introduced by the flatworm's pharynx. By exuding large amounts of slime (see Fig. 5 and 6), the slug could be attempting to fend off the flatworm's attack. However, this did not seem to be at all effective.

References:

- Lim, K. K. P., 2015. New Guinea flatworm *Platydermus manokwari* in Singapore. *Singapore Biodiversity Records*. 2015: 106-107.
- Ogren, R. E., 1995. Predation behaviour of land planarians. *Hydrobiologia*. 305: 105-111.
- Sugiura, S., 2010. Prey preference and gregarious attacks by the invasive flatworm *Platydemus manokwari*. *Biological Invasions*. 12 (6): 1499-1507.
- Tan H. H. & L. L. Koh, 2015. New Guinea flatworm, *Platydemus manokwari*, at Bishan Park. *Singapore Biodiversity Records*. 2015: 125.



Fig. 1. Flatworm crawling onto the slug's posterior end.



Fig. 2. Flatworm on the dorsal surface of the slug.



Fig. 3. Flatworm crawling to the slug's anterior end.



Fig. 4. Flatworm reaching the slug's head.



Fig. 5. Note beads of slime exuded by the slug which had retracted its eye stalks.



Fig. 6. Slug exuding copious amounts of slime as it was apparently overpowered by the flatworm.



Fig. 7. Flatworm flattening out its body and wrapping itself around the slug



Fig. 8. When disturbed, the flatworm released its hold on the slug which appears to have died.

Photographs by Tan Heok Hui