

Possible rodent and avian predation of tree snail *Amphidromus atricallosus perakensis*

Subjects: *Amphidromus atricallosus perakensis* (Mollusca: Gastropoda: Camaenidae).

Subjects identified by: Tan Siong Kiat & Chan Sow Yan.

Location, date and time: Singapore Island, Lower Seletar Reservoir; 29 December 2013; 1410 hrs.

Habitat: Secondary forest.

Observers: Foon Junn Kitt, Tan Siong Kiat & Chan Sow Yan.

Observation: Ten shells of *Amphidromus atricallosus perakensis* displaying various breakages (Fig. 1) were found at the edge of secondary forest. Each shell bears evidence of damage, apparently by predatory animals.

Nine of the shells appear to have been mechanically broken, possibly by birds (Fig. 1). Five of them show prominent breakage at the apical whorls, two shells at the lateral whorls, one shell a fragment of the lateral whorls, one shell a fragment of the apical whorls and one relatively intact shell with a single small hole at the terminal whorl.

A single shell bears damage that could be caused by a mammal. The broken edges of the shell appear to match the marks made by incisor teeth, very likely to be that of a rodent such as a rat or a squirrel (Fig. 2).

Remarks: *Amphidromus atricallosus temasek* (as *Amphidromus atricallosus perakensis*) has been observed to fall prey to the red-crowned barbet (*Megalaima rafflesii*) in Singapore, although the predator's technique of soft parts extraction remains unknown (Lok et al., 2009). Other birds have been observed to apply sharp pecks or continuous hitting of snail shell on anvils in order to break the shell and extract the soft parts within (Barker, 2004).

Lok & Tan (2008) speculated that *Amphidromus atricallosus temasek* (as *Amphidromus atricallosus perakensis*) in Singapore are also preyed on by rodents based on reports of rat predation on congeners in Malaysia (Schilthuizen et al., 2007). Snails eaten by small mammals have been shown to display broken shells with corrugated edges (Barker, 2004).

Based on these observations, nine of the shells featured here display damage apparently characteristic of avian predation while one exhibits damage consistent with that made by a small mammal. Scrape marks possibly inflicted by the teeth of a small rodent are also distinctly visible (Fig. 2). However, the exact species of mammalian or bird predator remains unknown. Reports of first hand observations of predation on the snails are necessary for confirmation.

References:

- Barker, G. M., 2004. *Natural Enemies of Terrestrial Molluscs*. CABI Publishing, Oxfordshire. 640 pp.
- Lok, A. F. S. L. and S. K. Tan, 2008. A review of the Singapore status of the green tree snail, *Amphidromus atricallosus perakensis* Fulton, 1901 and its biology. *Nature in Singapore*. 1: 225-230.
- Lok, A. F. S. L., C. J. Yao and B. S. Tey, 2009. Barbets of Singapore part 3: forest species, with emphasis on *Megalaima rafflesii* Lesson, the red-crowned barbet. *Nature in Singapore*. 2: 69-76.
- Schilthuizen, M., P. G. Craze, A. S. Cabanban, A. Davison, J. Stone, E. Gittenberger & B. J. Scott, 2007. Sexual selection maintains whole-body chiral dimorphism in snails. *Journal of Evolutionary Biology*. 20(5): 1941-1949.

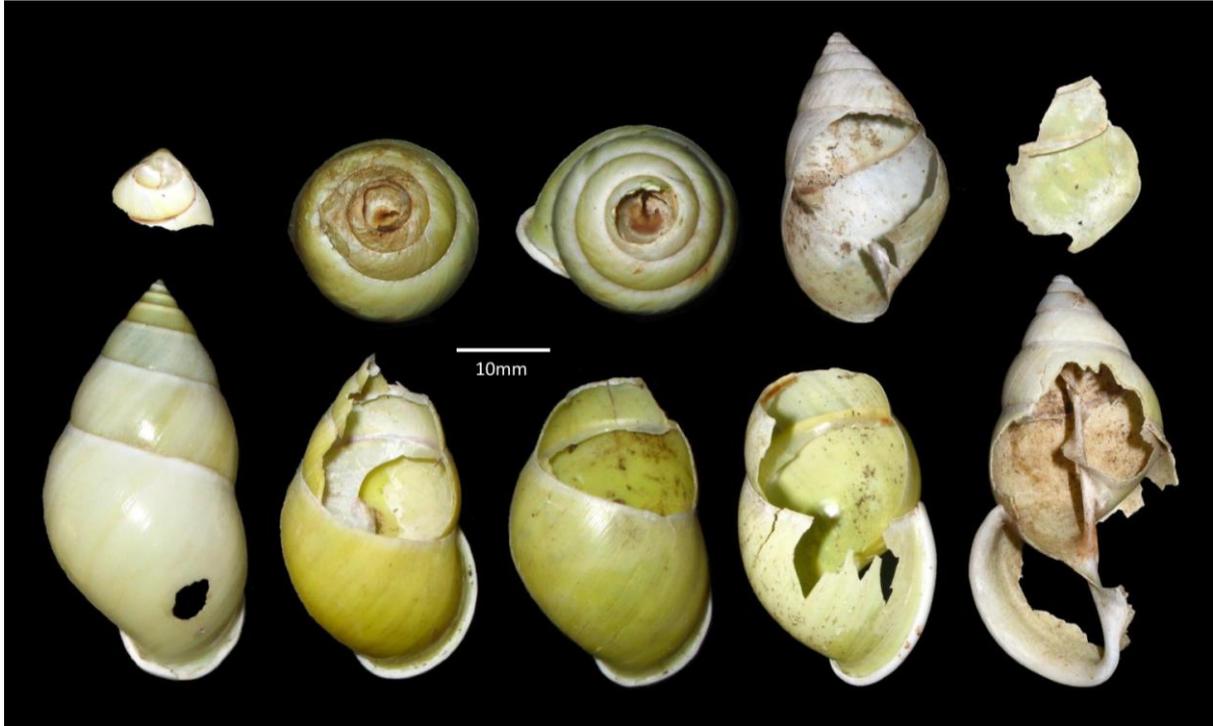


Fig. 1. Shells of *Amphidromus atricallosus perakensis* in various stages of damage possibly caused by rodent (bottom row, right-most shell) and avian (remainder of shells) predators. Photograph by Foon Junn Kitt



Fig. 2. Close ups of shell showing distinct marks that appear to have been made by a rodent. Photograph by Foon Junn Kitt

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