

An Active Anti-Predator Strategy Observed in the Land Snail *Plekocheilus glaber*

This note provides information on the defensive behaviour of the land snail *Plekocheilus glaber*, as observed by the author. Although information on this species seems scarce, *P. glaber* is not uncommon on the islands of Trinidad and Tobago. Its distribution also includes Grenada, Suriname and Guyana (Rutherford 2011).

Snails are typically known to use their shells for protection, retracting into them for refuge from outside threats (Edgell *et al.* 2008, Morii *et al.* 2016, Le Ferrand and Morii 2020). Some snails have even evolved sculptured shells to protect against shell-swallowing, shell-crushing or shell-entering predation (Edgell *et al.* 2008). However, some snails use their shells offensively as a defence mechanism, when approached by predators (Morii *et al.* 2016, Niwa *et al.* 2023, Sato and Yoshikawa 2024).

Ezohelix gainesi, a Japanese snail, and *Karaftohelix selskii*, a snail found in far eastern Russia, are just two of several species known to utilize their shells in this way (Morii *et al.* 2016, Niwa *et al.* 2023). I present here a record of *P. glaber* using its shell offensively. As far as I can ascertain, this is the first time such behaviour has been documented in this species.

While walking up a a river through the forest near Brasso Seco village at approximately 0900 hrs on 2 January

2021, I observed a snail *P. glaber* executing a swing-shell active defence strategy in response to disturbance by an unidentified black wasp. The snail was moving up a *Heliconia* leaf protruding over the river's edge. The wasp repeatedly flew over the snail, seemingly attempting to attack its exposed body. In retaliation, the snail swung its shell every time the wasp came close, effectively fending off the attack.

The snail's shell would swing to one side of its body until it reached a perpendicular position (Fig. 1 left), then rotate back through to the opposite side of its body (Fig. 1 right) achieving the same perpendicular height. This routine continued for about five seconds until the wasp flew away upon my approach to document the phenomenon. While I did not capture footage of the wasp, I was fortunate to capture footage of the snail swinging its shell before it repositioned it in the usual position – parallel to its body (Fig. 2). The recording of this incident can be viewed on the TTFNC's youtube channel at: <https://www.youtube.com/shorts/KmNwk3xZZ-k>.

I observed the snail for about three more minutes, hoping the occurrence would repeat, but the wasp did not return, and the snail did not continue swinging its shell. I left the snail to carry on along its path.



Fig. 1. *Plekocheilus glaber* swinging its shell in order to fend of the wasp predator, before repositioning its shell to its usual parallel position.



Fig.2. Image of *Plekocheilus glaber* with its shell in its usual parallel position.

REFERENCES

Edgell, T.C., Brazeau, C., Grahame, J.W. and Rochette, R. 2008. Simultaneous defense against shell entry and shell

crushing in a snail faced with the predatory shorecrab *Carcinus maenas*. *Marine Ecology Progress Series*, 371, 19 Nov. 2008, 191-198, <https://doi.org/10.3354/meps07698>.

Le Ferrand, H. and Morii, Y. 2020. Structure–behaviour correlations between two genetically closely related snail species. *Royal Society Open Science* 7:191471. <http://dx.doi.org/10.1098/rsos.19147.1>.

Morii, Y., Prozorova, L. and Chiba, S. 2016. Parallel evolution of passive and active defence in land snails. *Scientific Reports*, 6-1, 11 Nov. 2016, <https://doi.org/10.1038/srep35600>.

Niwa, S., Osada, N. and Saeki, I. 2023. Young climbers successfully avoid predators: Survival behavioural strategy of juveniles of the land snail *Ezohelix gainesi*. *Biological Journal of the Linnean Society*, 138-1, 30 Jan. 2023, 27–36, <https://doi.org/10.1093/biolinnean/blac132>.

Rutherford, M.G. 2011. Land Snails from the Five-Islands Archipelago, North-west Trinidad, West Indies. *Living World, Journal of The Trinidad and Tobago Field Naturalists' Club*, 2011, 42-45.

Sato, N. and Yoshikawa, A. 2024. Function of snail shell hairs in anti-predator defense. *The Science of Nature*, 111-2, 27 Feb. 2024, <https://doi.org/10.1007/s00114-024-01901-z>.

Shaquille Everod Gerge

West Indian Herping Organisation
georgewildlife@outlook.com