Parmarion martensi

Simroth, 1893

FAMILY ARIOPHANTIDAE

Current Risk Status in Fiji:
High (invasive)

Body Type:
Semi-slug: small plate-like shell carried on mid-posterior dorsum

Size:
Live body length to 45 mm, shell ~ 8 mm length and 5 mm width

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Manaaki Whenua Landcare Research

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CONSERVATION INTERNATIONAL Pacific Islands

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Special Points of Interest:

- *Parmarion martensi* is well established in several areas of Fiji and is currently considered to be Fiji's highest risk introduced land snail species.
- *Parmarion martensi* is considered invasive in Fiji because it is common in relatively undisturbed native forest and is very likely to out compete native fauna.
- Introduced land snails in Fiji are known vectors for the rat lung worm parasite which may cause illness in humans.

Description & Distribution

Description

Parmarion martensi Simroth 1893 is a long elongate semi-slug, with a visceral hump whose mantle flaps mostly conceal a small oval plate-like shell. The tail has a distinct pale cream line (keel) ending over a short caudal horn at body posterior. The shell is often covered by the mantle tissue and therefore is not always directly visible. The species is variable in body colour ranging from pale grey to very dark brown occasionally with an orange tinge. It is possible these different colour morphs may be a different species of the same genus.

Source and location of photographs: M. Matewai & G. Brodie (Viti Levu)

Distribution

Parmarion martensi is indigenous to south-east Asia but now distributed in the Pacific territories of Fiji, Samoa, and Hawaii. Not yet recorded as established in Australia, New Zealand or mainland USA. Recorded from Fiji's three largest islands, Viti Levu, Vanua Levu and Taveuni. Occurrence on more isolated islands e.g. Rotuma is currently unknown. Dispersal has been facilitated by humans (Barker *et al*. 2005) and this species is likely to be transported within the Fijian islands with harvested crops, horticultural produce and camping equipment.

Habitat

Parmarion martensi is found both on the ground (terrestrial) and in trees (arboreal). In Fiji, *P. martensi* is often found directly on crops or in moist leaf litter or within loose upper soil layers. It is obviously adaptable and can be found in all sheltered microhabitats, both in disturbed areas (including human infrastructure) and relatively "undisturbed" high priority forest areas e.g. Taveuni Forest Reserve. Found at low, mid and high (>800m) altitudes. The shells of dead animals are often found in soil used for agricultural purposes particularly after land clearing burns.

***Parmarion martensi* Simroth, 1893**



Biology & Behaviour

Biology

Herbivore and detritivore. Recorded to prefer a diet of soft plant material particularly fresh lettuce, papaya, hibiscus flowers and decaying vegetables. *Parmarion martensi* is hermaphroditic meaning it can function as both a male and a female. Extremely hardy, readily aestivates (shuts down) and can withstand being sealed in a small closed container for several weeks.

Behaviour

Excellent climber, very active, defecates readily when handled. Found singularly or in groups. Particularly active nocturnally, but has no obvious aversion to light or humans.

Threats & Similar Species

Threats

Parmarion martensi has a high livestock and human health risk; it is a known vector for the nematode parasite rat lung worm *Angiostrongylus cantonensis* which may lead to human eosinophilic meningoencephalitis. Risk is also heightened by the ready connection of the species to human food that is not normally cooked e.g. lettuce and papaya. Smaller specimens are likely to have a higher parasite load (Hollingsworth *et al*. 2007). Thorough washing of fruit and vegetable produce before consumption is required to avoid related parasite ingestion in humans. This species is a potential quarantine risk to non-infected trading partners and is also likely to reduce crop yields. The relative importance of *P. martensi* as a health risk, crop pest, or as a potential competitor to native land snails in Fiji, has yet to be fully documented.

Similar Species

The introduced slug *Deroceras laeve* (Müller, 1774) is less common in Fiji but similar in size and colour to *Parmarion martensi*. However, *D. laeve* has a very much reduced visceral hump, with the shell entirely internal, prefers only areas with cool temperatures, and does not generally display such a distinctly vigorous, active climbing habit.

Further Reading

Barker, G.M., Price, R. & Briggs, C. (2005). Priorities for additions to the Fijian protected natural areas network: an assessment based on complementarity in land snail assemblages. New Zealand Landcare Research contract report prepared for Wildlife Conservation Society, Suva. 162 pp.

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Cowie, R.H. (2008). Samoan Snail Project. http://www2.bishopmuseum.org/PBS/samoasnail/. Accessed January 22, 2010.

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