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TASMANIAN SNAIL REFERRED TO THE GENUS *VICTAPHANTA* (STYLOMMATOPHORA: PARYPHANTIDAE)

By Brian J. Smith
Curator of Invertebrates, National Museum of Victoria,
and
R. C. Kershaw
Honorary Associate, Queen Victoria Museum, Launceston, Tasmania

Abstract

The genus *Melavitrina* Iredale (1933) is placed in the synonymy of *Victaphanta* Iredale (1933) and the distribution of the three species of *Victaphanta* is discussed. The anatomy of the Tasmanian species *Victaphanta milligani* (Pfeiffer 1853) is described.

Introduction

Following recent work on the Victorian paryphantid genus *Victaphanta* Iredale 1933 (Smith 1969, 1970), the closely similar group of snails from W. Tasmania belonging to the genus *Melavitrina* Iredale 1933 were considered. Two species are described for the genus, *M. milligani* Pfeiffer (1854) and *M. fumosa* Tenison-Woods (1878) and these have often been closely compared to the *Victaphanta* species (Tenison-Woods 1878, Murdoch 1904, Cox and Hedley 1911, Davies 1912). Iredale's (1933) description of *Melavitrina* was not considered sufficient to separate these species from *Victaphanta* and Tenison-Wood's description of *M. fumosa* was not considered sufficient to separate this species from *M. milligani*. The object of this paper is to establish *Victaphanta milligani* as the single Tasmanian species of this genus, and to relegate *Melavitrina* and *fumosa* to the synonymy of these taxa.

Generic Placement

The genus *Victaphanta* was redescribed by Smith (1969). Both Iredale's scant description of the genus *Melavitrina,* and the shell and other anatomical features of the type species *M. milligani* fall within that description. Iredale (1933) differentiates the genus from *Helicarion* Ferussac and *Paryphanta* Albers because the last whorl is large with an 'open mouth' and the surface is shining black. However, the slight enlargement of the last whorl compared to the two Victorian *Victaphanta* species is here considered of specific significance. The shell being thin, composed mainly of conchin with very little calcareous material, umbilicus nearly closed, glossy with the inner whorls white to yellow and outer whorl dark brown, are all features of the genus *Victaphanta.*

With the inclusion of the Tasmanian species in *Victaphanta,* the number of species increases to three and gives a circum-Bass Strait distribution for the genus (Pl. 9, fig. 7). This is further reinforced by the discovery of subfossil shells very similar to *V. milligani* in the dunes of Flinders Island giving a date for the existence of this fauna of up to at least 6,000 years ago (E. D. Gill pers. comm.). All three species are confined to the wet temperate rainforest areas.

Victaphanta milligani (Pfeiffer, 1853)
(Pl. 9, figs. 1-6)

Vitrina milligani Pfeiffer, 1853, *Monographia Heliceorum Viventium,* Lipsiae 3: 4

Vitrina milligani Pfeiffer, 1954, *Proc. zool. Soc. Lond.* 20 (1852): 56

Helicarion milligani Gray, 1855, *Cat. Br. Mus. nat. Hist., Pulmonata* 1: 68

Vitrina milligani Pfeiffer, 1856, *Malakozoologische Blatter,* Cassel, 2: 116

Vitrina milligani Shuttleworth, 1856, *Notitiae Malacologicae,* Leipzig, 1: 16

Paryphanta milligani Albers, 1861, *Die Heliceen. Leipzig,* p. 48

Vitrina milligani Reeve, 1862, *Conch. Icon.* 13, *Vitrina* sp. 18

Vitrina milligani Cox, 1868, *Monograph of Australian Land Shells,* Sydney, p. 82, pl. 14, figs. 2-2a

Helicarion fumosa Tenison-Woods, 1878, *Proc. Linn. Soc. N.S.W.* 3: 124, pl. 12, figs. 3-3a

Helicarion milligani Tryon, 1885, *Man. Conch.* (2) 1: 172, pl. 26, figs. 11-12

Paryphanta fumosa Murdoch, 1904, *Trans. Proc. N.Z. Inst.* 36: 156, pl. 6

Paryphanta milligani Petterd and Hedley, 1909, *Rec. Aust. Mus.* 7 (4): 287

Paryphanta fumosa Petterd and Hedley, 1909, *Ibid.,* p. 287

Paryphanta milligani May, 1921, *Check-list of the Mollusca of Tasmania,* p. 92.

Paryphanta milligani var. *fumosa* May. 1921, *Ibid.,* p. 92

Melavitrina milligani Iredale, 1933, *Rec. Aust. Mus.* 19 (1): 40

Melavitrina milligani Iredale, 1938, *Aust. Zool.* 9 (2): 116

Melavitrina fumosa Iredale, 1938, *Ibid.,* p. 116

Melavitrina milligani Macpherson, 1958, *Illustrated Index of Tasmanian Shells,* p. 46, pl. 42, fig. 13

DIAGNOSIS Paryphantid snail, shell depressedly globosc, thin, composed mainly of conchin, glossy, inner whorls white to yellow to dark blown, spire nearly flat, suture deeply impressed, last whorl widc, aperture large, oblique, umbilicus almost closed, fine concentric lines on upper surface, lower surface almost smooth. Animal black with orange foot and mantle edge. Pharynx long, cylindrical, radula spatulate, without rachidian, teeth aculeate, unicuspid, approximate formula 38-0-38 to 41-0-41, of 78-86 rows. Reproductive system simple, vas deferens frce from common duct, attached to outer wall of vagina, running in a loop past genital atrium and entering penis at posterior end, penis longer than vagina.

TYPE MATERIAL Lectotype, here designated, and two paralectotypes in the British Museum (Natural History) No. 1969265 collected from a small island in Macquarie Harbour, Tasmania (probably by a Mr. Milligan). Dimensions of lectotypc (from photograph), max. diam. 21.9 mm, min. diam. 15.8 mm.

DISTRIBUTION The animal appears to be confined to the W. or N.W. portion of Tasmania but the lack of comprehensive collecting makes a precise statement of locality impossible. Specimens are in museum collections from the forest areas of the Duck River, Montague River and Arthur River of the N.W. corner of Tasmania, and from a wide area to the N. and E. of Strahan and Queenstown. In this latter area specimens were collected from Mt. Zeehan, Mt. Farrell, Mt. Pelion as well as around Queenstown and Macquarie Harbour. They also presumably occur at localities between these two areas but more collecting is needed. Specimens have also been reported (A. J. Dartnall pers. comm.) from the Port Davey area of S.W. Tasmania so the species may occur in all the wet forest areas of the W. half of that State.

ANATOMICAL NOTES Four specimens were used in this study, two collected from near Montague River by R. C. Kershaw, one Australian Museum specimen collected near Zeehan, and one from A. J. Dartnall, collected between Queenstown and Zeehan. The anatomy of *M. fumosa* has been described by Murdoch (1904) and both his findings and the present study show the anatomy to be very similar to that described for the other two species of *Victaphanta* (Smith 1970). It was therefore considered necessary to describe only those aspects of the anatomy which differ from those described for *V. atramentaria* and *V. compacta.*

PALLIAL REGION This region is similar to that of the other species, with the lappets around the pulmonary orifice, the termination of the rectum in a deep groovc just posterior to the orifice, and the pseudoureter running along side of the rectum. The kidney appears larger than in *V. atramentaria* and there is no sign of the mantle gland on the posterior margin of the collar as suggested for that species by Smith (1970).

ALIMENTARY SYSTEM The only difference in the alimentary system between this species and the two Victorian species is in the radula. The radula is spatulate, without a rachidian and the teeth are aculeate, unicuspid with oblong base plates. The teeth formula is

38-0-38 to 41-0-41 x 78 to 86 rows. The teeth increase in size from the margins to a maximum about four teeth from the centre, and then decrease sharply. This compares with teeth formula of 64-0-64 to 67-0-67 x 102-105 rows for *V. atramentaria* and 60-0-60 to 63-0-63 x 99-103 rows for *V. compacta.*

The pharynx is very large and museular, filling the head-foot cavity. The oesophagus arises as a narrow tube from the dorsal surfaee of the pharynx about a third of the way along its length. The salivary glands are fused into a single almost ovoid body, although its origin as two separate bodies can be seen by the lobing.

Reproductive System This system differs from that of the other two *Victaphanta* speeies in three respects (Pl. 9, fig. 6). 1. The common duct is similar but the prostate gland is mainly confined to the anterior end of the duct with only a small amount at the posterior? end. 2. In the Tasmanian species the spermathecal duct is short. The simple sac-like spermatheca is situated in a fold of the anterior end of the common duct immediately posterior to a point where the vas deferens emerges from the common duct to run freely along the outside of the vagina to the posterior end of the penis. 3. The penis is a long, uniformly thin tubular strueture approximately 1·5 times longer than the vagina.

The three speeies appear very similar in:

1. The strueture of the hermaphrodite gland and the receptaculum seminalis.
2. The internal surface of the penis which consists of a covering of conical papillae with grooves running from the point of entry of the vas deferens.

Remarks The original description of *Victaphanta milligani* Pfeiffer is here reeorded as 1853, *Monographia Heliceorum Viventium,* Lipsiae, 3 : 4. Most authors, ineluding Pfeiffer himself in the above referenee, state the original referenee as *Proc. zool. Soc. Lond.* 20 (1852): 56. However, the publieation date for the latter referenee is Mareh 22nd, 1854; thus the former referenee has priority. This probably oeeurred through an oversight by the editor of the *Proceedings* as it appears that Pfeiffer expected the deseription to appear in the issue prior to the publication of the third volume of his *Monographia.* The deseriptions in both referenees are identical, but this priority should be borne in mind when dealing with other speeies described in these papers.

H. fumosa Tenison-Woods 1878 is here reduced to the synonymy of *V. milligani* as the minute differences used to separate it from *milligani* fall within the intraspecifie variation of that species. One of us (RCK) has colleeted a series of specimens from the one locality on the Montague River which show all stages of variation between the two 'forms'.

Victaphanta milligani differs from the two Vietorian species of the genus in the size and shape of the shell, the number of teeth per row in the radula, and the structure of the reproductive system. The shell is smaller (maximum diameter approximately 24 mm), and characterised by its brown colour, the extreme enlargement of the last whorl, and the wide oblique aperture approaching that of a vitrinid. The radula averages only 38-41 teeth per half row compared to 60-63 for *V. compacta* and 64-67 for *V. atramentaria.* The reproductive system differs from the Vietorian species of the genus in two important respeets. The spermathecal duet is short terminating in a simple sae-like spermatheca situated in the region of the junction of the common duet with the vagina. The other species have long spermathecal ducts, equal in length to the common duct. Secondly, the penis is approximately 1·5 times the length of the vagina instead of being equal to or shorter than the vagina as in the other species.

It was suggested by Solem (1959) that the genus *Melavitrina* eould be referable to *Wainuia* Powell 1930 from New Zealand. However, the anatomy differs from that of the type speeies *Wainuia urnula* (Pfeiffer 1855) as described by Murdoch (1903). The radula of *W. urnula* has a teeth formula of 14-0-14, much less than *V. milligani* and the teeth have no distinet oblong base plate.

In *W. urnula* the second tooth from the margin in eaeh row is the largest and the remainder diminish in size towards the centre. In all three *Victaphanta* species the largest

tooth is the fourth or fifth from the centre and the teeth diminish in size from this point. The other main differences are seen in the reproductive system. *Wainuia* has a finger-like, tubular appendage to the posterior end of the spermatheca, and the posterior part of the penis is expanded into a sac-like portion. These two characters are not seen in *V. milligani.*

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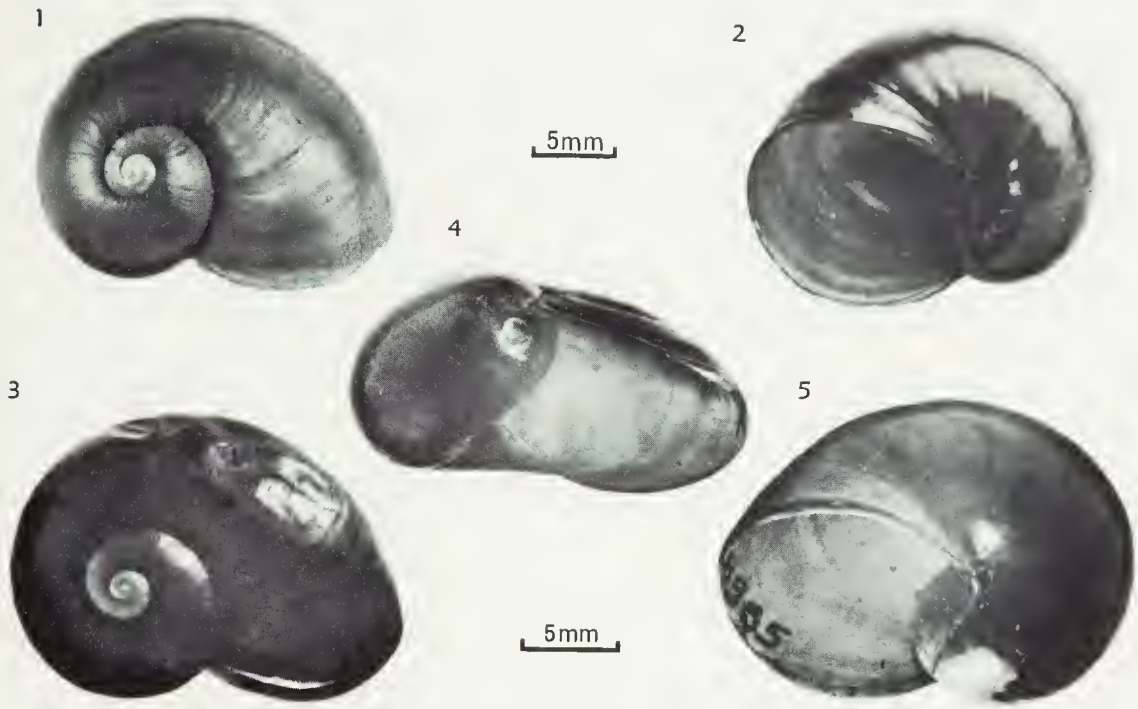
Explanation of Plate 9

Fig. 1-2—Lectotype of *Vitrina milligani* Pfeiffer, dorsal and ventral views, BM (NH) Reg. No. 1969265.

Fig. 3-5—Holotype of *Helicarion fumosa* Tenison-Woods, dorsal, lateral and ventral views, AM. C78335. (Photo by E. Rotherham).

Fig. 6—Diagram of reproductive system of *Victaphanta milligani.*

Fig. 7—Distribution map of the three species of *Victaphanta.* SF on Flinders Island denotes the site of subfossils similar to *V. milligani.* (Drawn by Miss R. Plant).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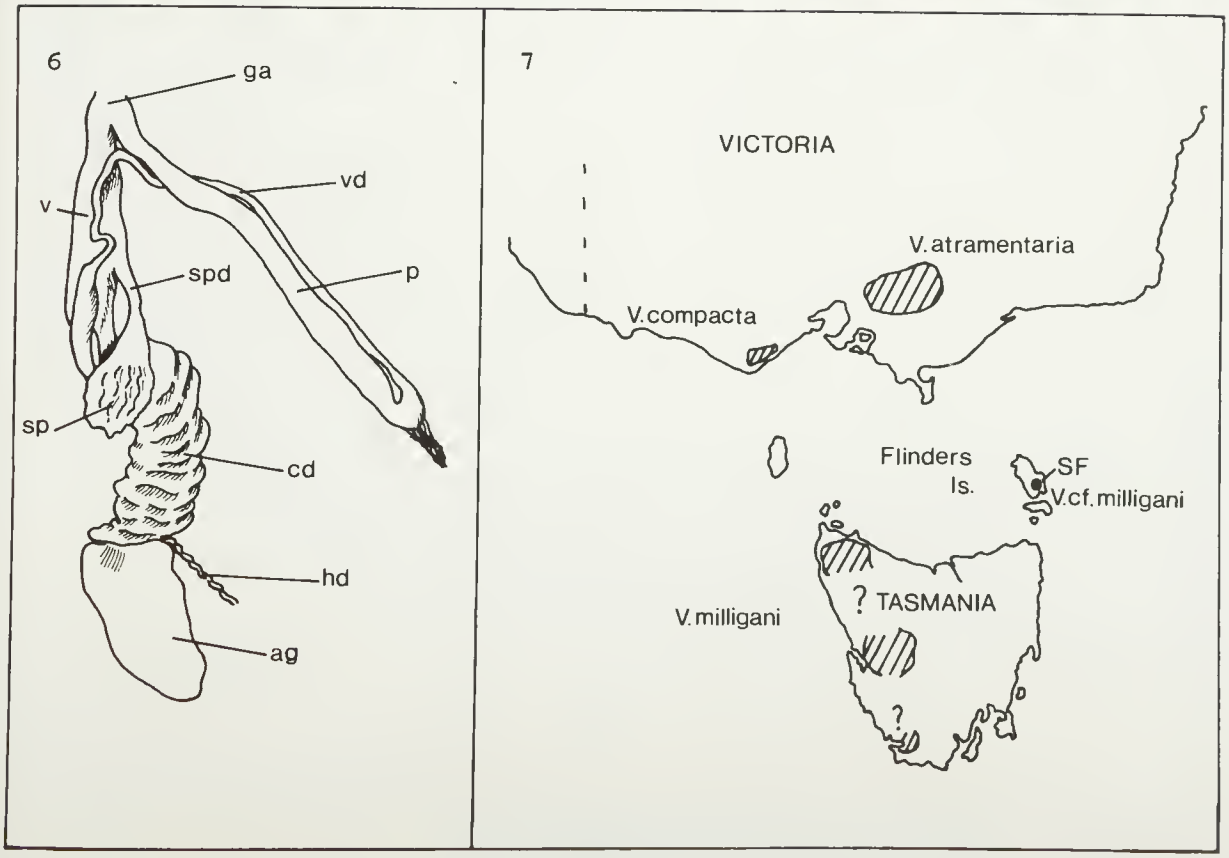
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