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# FIELDIANA • ZOOLOGY

Published by

FIELD MUSEUM OF NATURAL HISTORY

Volume 51

SEPTEMBER 19, 1969

No. 12

Veronicellid land slugs from the New Hebrides,  
with description of *Semperula solemi*,  
new species

NATURAL HISTORY SURVEY

LOTHAR FORCART

NATURHISTORISCHES MUSEUM, BASEL<sup>1</sup>

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Previous records of New Hebridean land slugs belonging to the family Veronicellidae were given by Collinge (1900), Grimpe and Hoffmann (1925) and Hoffmann (1929). Collinge (1900) reported three species from Vate Island (= Esafate). One of these, *Veronicella brunnea*, he described on the basis of a single specimen. Two specimens were referred to *Vaginula leydigi* (Simroth) and one to *V. hedleyi* (Simroth). Both specimens were described originally by Simroth (1889, p. 552) from material collected in Brisbane, Queensland. The original specimens could not be located in the British Museum (Natural History) by J. F. Peake and they are presumed lost. Although he had not seen these specimens, Hoffmann (1925, pp. 120, 190, 191), synonymized *Vaginula leydigi* of Collinge with *Laevicaulis alte* (Férussac) and placed both *Veronicella brunnea* and *Vaginula hedleyi* in the synonymy of *Vaginulus (Sarasinula) plebeius* Fischer. On the basis of Collinge's descriptions and illustrations, I concur in this action.

Grimpe and Hoffmann (1925) reported on the anatomy of seven specimens belonging to *Vaginulus plebeius* from Malo Island. They could not be located in the Naturhistorisches Museum, Basel collection. Hoffmann (1929, pp. 115-117) recorded two examples of *V. plebeius* from Espiritu Santo. These are preserved in the British Museum (Natural History).

This paper reports on material collected by Borys Malkin in 1958 and several sets collected by British zoologists in the 1920's and 1930's. For the loan of this material, I am indebted to Dr. Alan

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Library of Congress Catalog Card Number: 71-92690

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Solem, Field Museum of Natural History, Chicago, and to Mr. John Peake, British Museum (Natural History), London. The illustrations are by O. Garraux, Basel.

The following abbreviations indicate the depository of mentioned specimens:

BMNH—British Museum (Natural History), London

FMNH—Field Museum of Natural History, Chicago

NMB—Naturhistorisches Museum, Basel

### SYSTEMATIC REVIEW

Previously recorded data was summarized by Solem (1959, pp. 41–42). He had no material available for study, so compiled the scattered records. Following the results of earlier studies, I recognize three genera in the available material, *Laevicaulis*, *Vaginulus* and *Semperula*.

#### Genus *Laevicaulis* Simroth, 1913

*Laevicaulis* Simroth, 1913, in Voeltzkow, Reise Ostafrika, 3 (3), pp. 147, 202.

Type species: *Vaginula comorensis* Fischer, 1883 by subsequent designation of Pilsbry (1919, p. 316).

*Eleutherocaulis* Simroth, 1913, *op. cit.*, pp. 187, 202. Type species: *Vaginula comorensis* Fischer, 1883, by subsequent designation of H. B. Baker (1925, p. 15); Solem, 1959, Fieldiana: Zoology, 43, p. 42.

*Meisenheimeria* Grimpe and Hoffmann, 1924, Zool. Anz., 58, p. 177. Type species: *Vaginula frauenfeldi* Semper, 1885 by original designation.

H. B. Baker (1931, p. 137) mentioned "In an earlier paper (1925, Naut., 39, p. 18), I followed Pilsbry's use of *Laevicaulis* in preference to *Eleutherocaulis*, but now realize that Simroth's own use (1913, p. 202) of the latter as the ranking term makes *Eleutherocaulis* the valid name and *Laevicaulis* the synonym." This opinion was accepted by Solem (1959, p. 42).

It contradicts Article 43 of the *International Code of Zoological Nomenclature*, which states that "The categories in the genus-group are of co-ordinate status in nomenclature. . . ." The selection of the name *Laevicaulis* by Pilsbry (1919, p. 316) as first reviser stands subsequently (Article 24 of the Code).

#### *Laevicaulis alte* (Férussac, 1821)

*Vaginulus alte* Férussac, 1821, Tabl. syst. Limaces, p. 14. Type locality: Pondicherry, India; Férussac, 1821, in Férussac and Deshayes, Hist. Nat. Moll. terr. fluv., pl. 8A, fig. 8 and pl. 8B, fig. 6 (1822).



*Veronicella leydigi* (Simroth), Collinge, 1900, in Willey, Zool. Res. Voy. N. Caledonia, **4**, p. 435.

*Meisenheimeria alte* f. *leydigi* (Simroth), Grimpe and Hoffmann, 1925, Nova Caledonia, Zool., **3** (3), p. 384.

*Meisenheimeria alte* (Férussac), Grimpe and Hoffmann, 1925, Zeits. wiss. Zool., **124** (1), pp. 26–31; Hoffmann, 1925, Jena. Zeits. Naturwiss., **61** (1/2), pp. 120–129, 226–228.

*Laericaulis alte* (Férussac), Forcart, 1953, Ann. Mus. Roy. Congo Belge, Ter-vueren, Zool., **23**, pp. 63–68.

*Eleutherocaulis alte* (Férussac), Solem, 1959, Fieldiana: Zool., **43**, p. 42.

*Range*.—Vate and Espiritu Santo.

*Material examined*.—Vila, Vate (2 specimens, FMNH 160006 collected July 1958 by B. Malkin). Santo, Espiritu Santo (7 specimens, FMNH 160007 collected July 1958 by B. Malkin).

### Genus *Vaginulus* Férussac, 1821

*Vaginulus* Férussac, 1821, Tabl. syst. Limaces, p. 13. Type species: *Vaginulus taunaisii* Férussac, 1821 by subsequent designation of Stoliczka (1873, Jour. Asiat. Soc. Bengal, **42**, p. 35).

#### Subgenus *Sarasinula* Grimpe and Hoffmann, 1924

*Sarasinula* Grimpe and Hoffmann, 1924, Zool. Anz., **58**, p. 177. Type species: *Vaginulus plebeius* Fischer, 1868 by original designation.

Considerable controversy has existed concerning the taxonomic position of *Sarasinula*. Originally described as a genus, it was synonymized with *Imerinia* Cockerell (1891, type species: *Vaginula grandidieri* Crosse and Fischer, 1871 by subsequent designation of Cockerell and Collinge, 1893, p. 195) by H. B. Baker (1925a, p. 17). While Hoffmann (1927, p. 3) accepted Baker's proposal, at a later time H. B. Baker (1931, pp. 135–136) separated the two taxa. He classified *Sarasinula* as a section of *Angustipes* Colosi, 1922, which he placed as a subgenus of *Vaginulus*, while *Imerinia* was considered generically distinct. H. B. Baker (1925b, 1931, p. 136) grouped the subsections of *Vaginulus* as follows:

Genus *Vaginulus* Férussac, 1821

Subgenus *Vaginulus*, s. s.

Section *Vaginulus*, s. s.

Section *Phyllocaulis* Colosi, 1922

Subgenus *Angustipes* Colosi, 1922

Section *Angustipes*, s. s.

Section *Latipes* Colosi, 1922

Section *Sarasinula* Grimpe and Hoffmann, 1924

As a result of additional studies and the fact that the taxon "section" is not accepted for general use, I propose to divide *Vaginulus* into five subgenera—*Vaginulus*, s. s., *Phyllocaulis*, *Latipes*, *Angustipes*, and *Sarasinula*.

KEY TO THE SUBGENERA OF *VAGINULUS*

1. Hindgut and vagina enter body wall separated . . . . . 2  
Hindgut and vagina enter body wall in close juxtaposition . . . . . 3
2. Penis with spatha . . . . . *Phyllocaulis*  
Penis without spatha . . . . . *Vaginulus*, s. s.
3. Canalis junctor enters bursa of receptaculum seminis near apex . . . . . *Latipes*  
Canalis junctor enters bursa of receptaculum seminis near base . . . . . 4
4. Bursa of receptaculum seminis sessile . . . . . *Angustipes*  
Receptaculum seminis with bursa and pediculus . . . . . *Sarasinula*

***Vaginulus* (*Sarasinula*) *plebeius* Fischer, 1868**

*Vaginulus plebeius* Fischer, 1868, Jour. de Conchy., 16, p. 146. Type locality: New Caledonia.

*Veronicella brunnea* Collinge, 1900. In A. Willey, Zool. Res. Voy. New Caledonia, 4, p. 435, pl. 41, figs. 18–23. Type locality: Vate, New Hebrides.

*Veronicella hedleyi* (Simroth), Collinge, 1900, loc. cit.

*Sarasinula plebeja* (*sic*) (Fischer), Grimpe and Hoffmann, 1925, Nova Caledonia, 3 (3), pp. 343, 353, 357–362, 365–366, 377–378, 383, text figs. 2a, 3a, 4a, 5a, 5c, 6a, 6c, 7, 8a, 9, pl. 6, figs. 1–3.

*Imerinia plebeja* (*sic*) (Fischer), Hoffmann, 1929, Zool. Anz., 84, (5/6), pp. 108, 115–117.

*Angustipes* (*Sarasinula*) *plebeius* (Fischer), Solem, 1959, Fieldiana: Zool., 43, p. 41.

*Range*.—Vate, Omba, Malekula, Espiritu Santo, and Malo.

*Material examined*.—New Hebrides (4 specimens, BMNH 1936.9.52–55 collected by T. Harrison): Omba (=Aoba), Bankaharijitoa above Dunduy at 1,500–2,000 ft. elevation in forest under logs and bark (13 specimens, FMNH 160012 collected August 1958 by B. Malkin). Malekula (1 specimen, BMNH 1936.12.9.10): Ounua (1 specimen, BMNH 1936.12.9.25 collected April 1929 by L. E. Cheesman). Espiritu Santo, Hog Harbour (2 specimens, BMNH 1929.6.25.4–5 collected by J. R. Baker).

**Genus *Semperula* Grimpe and Hoffmann, 1924**

*Semperula* Grimpe and Hoffmann, 1924, Zool. Anz., 58, p. 177. Type species: *Vaginula idae* Semper, 1885.

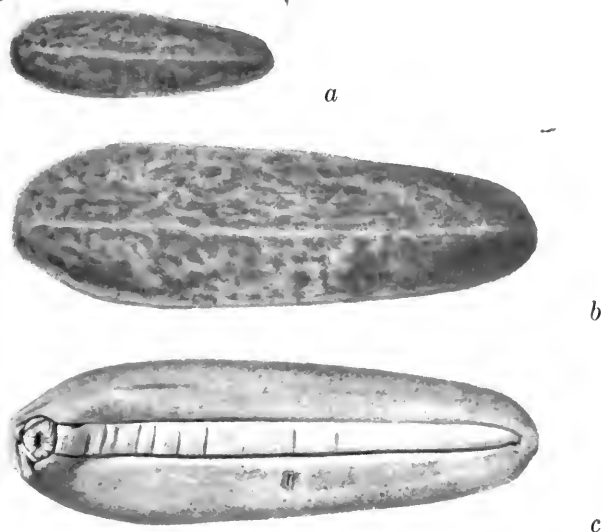


FIG. 1. *Semperula solemi*, new species. Paratype from Santo, Espiritu Santo. FMNH 160020. a, dorsal view, actual size; b, dorsal view, 2 $\times$ ; c, ventral view, 2 $\times$ .

***Semperula solemi*, new species. Figures 1-3.**

*Diagnosis*.—A species of the genus *Semperula* that is closely related to *S. wallacei* (Issel), but separable externally by the shorter distance of the female gonopore from the pedal groove and the narrower sole.

*Description*.—External features (fig. 1): Ground color of notum yellowish-brown with gray speckles. Hyponota and sole with same ground color, some specimens possessing fine dark spots on the hyponota. Notum with fine pores and very fine papillae. Sole width half or less than half width of one hyponotum. Female opening a transverse slit in hyponotum, usually surrounded by darker pigmentation, but the latter indistinct in some specimens. Internal anatomy typical of genus *Semperula*, with penis (figs. 2-3) having a longer and more slender glans than in *S. wallacei* (see Hoffmann, 1941, p. 230, fig. 1). Penial gland consists of a pointed papilla and about 16 glandular tubules that are partly forked and are compacted to form an "S"-shaped bundle (fig. 3, b).

*Range*.—Vate and Espiritu Santo.

*Holotype*.—Santo, Espiritu Santo, New Hebrides. Field Museum of Natural History 160022. Collected by Borys Malkin in July 1958.



FIG. 2. *Semperula solemi*, new species. Holotype. Penis drawn from a transparent preparation, 15 $\times$ .

*Paratypes*.—Vate: Vila (22 specimens, NMB 11.007-b, FMNH 160016-7). Espiritu Santo: Santo (38 specimens, NMB 11.007-a, FMNH 160010, FMNH 160018-21 collected by B. Malkin in July 1958).

*Remarks*.—Measurements of the nine largest examples from each locality are given in Tables I and II. Definitions of the measurements are:

1. Notum
  - 1a. Notum length, bowed measurement
  - 1b. Notum width, bowed measurement
  - 1c. Length/width ratio
2. Right hyponotum
  - 2a. Width at midpoint
  - 2b. Width at female pore
3. Sole
  - 3a. Width at midpoint
  - 3b. Ratio of right hyponotum width (2a) to sole width (3a)
4. Female opening
  - 4a. Distance from anterior end of notum
  - 4b. Distance from posterior end of notum

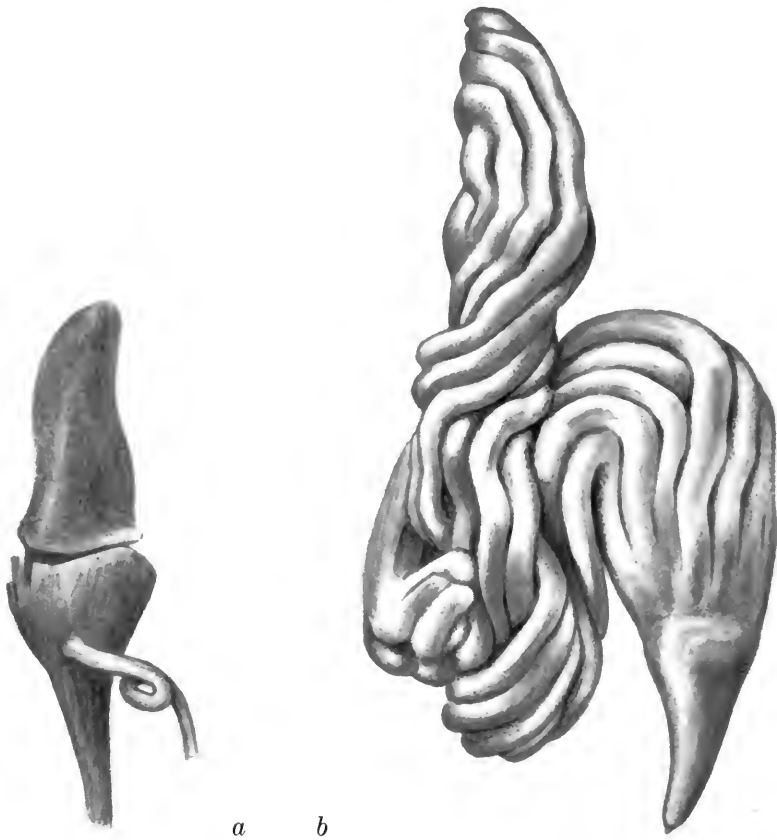


FIG. 3. *Semperula solemi*, new species. Paratype from Vila, Vate. *a*, penis 15 $\times$ ; *b*, penial gland, 15 $\times$ .

- 4c. Distance from middle of pore to pedal groove
- 4d. Ratio of 4a/4b
- 4e. Ratio of 2b/4c

All measurements are in millimeters and were made to conform with those used by Hoffmann. There are no significant differences between the two samples. All specimens had been preserved in 70 per cent alcohol.

Dissection showed that the penis is longer, more slender, and has a finely-papillated glans (see figs. 2, 3) when compared with *Semperula wallacei* as described by Hoffmann (1941, p. 230), fig. 1).

TABLE I.—Measurements of *Semperula solemi*, new species, from Santo, Espiritu Santo.

Measured characters —	1a	1b	1c	2a	2b	3a	3b	4a	4b	4c	4d	4e
Holotype (dissected)	41.7	15.4	2.7	5.5	4.8	2.0	2.4	19.8	15.7	2.2	1.3	2.5
Paratypes (dissected)	41.3	15.5	2.7	5.2	5.3	1.8	2.9	18.7	19.5	2.1	1.0	2.5
	40.3	14.5	2.8	5.2	4.7	1.9	2.8	17.7	14.8	2.0	1.2	2.4
	40.0	12.2	3.3	4.5	4.2	1.9	2.4	16.3	17.0	1.6	1.0	2.6
(dissected)	37.5	15.0	2.5	5.3	4.7	2.7	2.0	19.1	15.1	2.0	1.3	2.4
	36.6	14.5	2.5	4.5	4.5	1.9	2.4	16.8	14.4	1.6	1.2	2.8
	36.3	14.4	2.5	5.2	5.2	2.3	2.3	17.8	16.2	2.3	1.1	2.3
	35.6	14.6	2.5	4.7	4.7	2.1	2.2	16.0	14.4	1.5	1.2	3.1
	34.7	14.3	2.4	4.5	4.5	1.9	2.4	14.0	15.9	1.6	0.9	2.8
Maximum value	41.7	15.5	3.3	5.5	5.3	2.7	2.9	19.8	19.5	2.3	1.3	3.1
Minimum value	34.7	12.2	2.4	4.5	4.2	1.8	2.0	14.0	14.4	1.5	0.9	2.3
Mean value	38.2	14.4	2.7	5.0	4.7	2.0	2.4	17.4	15.8	1.9	1.1	2.6

TABLE II.—Measurements of *Semperula solemi*, new species, from Vila, Vate.

Measured characters —	1a	1b	1c	2a	2b	3a	3b	4a	4b	4c	4d	4e
All are paratypes	44.4	19.0	2.3	5.3	5.3	2.1	2.5	18.6	15.7	2.0	1.2	2.6
(dissected)	39.0	13.7	2.8	3.8	3.2	2.1	1.8	17.5	17.1	1.4	1.0	2.3
	36.6	13.6	2.7	4.7	4.7	1.5	3.1	14.8	16.5	2.0	0.9	2.3
	35.8	11.3	3.7	4.3	4.3	1.8	2.4	16.3	16.2	1.5	1.0	2.9
	35.5	15.2	2.3	4.2	3.8	2.0	2.1	17.0	13.5	1.8	1.3	2.1
	33.4	13.8	2.4	4.4	4.4	1.5	2.9	13.6	13.5	1.7	1.0	2.6
(dissected)	33.4	16.2	2.1	4.4	4.6	2.0	2.3	14.3	16.7	2.4	0.9	1.9
	33.2	14.5	2.3	4.7	4.5	1.9	2.5	17.2	14.0	2.5	1.2	1.8
	30.5	13.3	2.3	4.2	4.2	1.4	3.0	15.3	15.7	2.2	1.0	1.9
Maximum value	44.4	19.0	3.7	5.3	5.3	2.1	3.1	18.6	17.1	2.5	1.3	2.9
Minimum value	30.5	11.3	2.1	3.8	3.2	1.4	1.8	13.6	13.5	1.4	0.9	1.8
Mean value	35.7	14.5	2.8	4.4	4.3	1.8	2.5	16.0	15.4	1.9	1.0	2.2

*Semperula solemi* is dedicated to Alan Solem, investigator of mollusks of the New Hebrides.

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