

**A note on the genera *Costigo* and *Pupisoma*
(Gastropoda, Pulmonata: Vertiginidae)**

J.J. VERMEULEN & J.G.M. RAVEN

c/o Nationaal Natuurhistorisch Museum, P.O. Box 9517, 2300 RA Leiden, the Netherlands

The genera *Costigo* Boettger, 1891, and *Pupisoma* Stoliczka, 1873, are discussed. The southeast Asiatic species of *Pupisoma* are divided into two groups, mainly according to differences in shell sculpture. Records extending the range of *Pupisoma lignicola* are given.

Key words: Mollusca, Pulmonata, Vertiginidae, *Costigo*, *Pupisoma*, Southeast Asia.

Recently, the Indian vertiginid *Pupisoma lignicola* (Stoliczka, 1871) (see Pilsbry, 1920b) was found in Laos and Peninsular Malaysia. A literature survey revealed that *Costigo moleculina* Van Benthem Jutting, 1940, from Java, refers to the same species.

The genus *Costigo* Boettger, 1891 [type species *Vertigo (Costigo) saparuaana* Boettger, 1891] has long been misapplied as a partial substitute of *Pupisoma* Stoliczka, 1873 (type species *Pupa lignicola*, Stoliczka, 1871; full references to both in Pilsbry, 1920a, 1920b). Comparison of the type species shows that a close phylogenetic relationship is not evident, see figs. 1 and 2. *Pupa lignicola* has a minutely pitted shell surface. Radial ribs, if any, occur on the first whorls only, and have a periostracal crest. The aperture has a columellaris, and often a parietalis. In *Vertigo saparuaana* the shell surface is not pitted. Low radial ribs without a periostracal crest occur over the entire shell. The aperture has a parietalis, a columellaris and two palatales. Nevertheless, on account of the diagnostic characters shared between the two (the presence of a parietalis and a columellaris), various authors have included Southeast Asiatic species similar to *Pupa lignicola* in the genus *Costigo*, such as Boettger (1891, p. 270: "Eine zweite art von *Costigo* lebt auf Busuanga"), Pilsbry [1920a: *Costigo calamianica* (Von Moellendorff, 1898)], Van Benthem Jutting (1940: *Costigo moleculina* Van Benthem Jutting, 1940), and Thompson & Dance [1983: *Costigo pulvisculum* (Issel, 1874)]. Paraphyly or polyphyly of *Costigo* is therefore likely; in fact Pilsbry (1920a: 366) already observed that the genus might be "merely a convenience". With the exception of *Vertigo saparuaana*, all species mentioned should be included in the genus *Pupisoma*, because *Pupa lignicola* is the type species of this genus.

The genus *Pupisoma*, occurring worldwide in the tropics, has long been used as a receptacle for vertiginids loosely characterized by their small size and absence of palatal teeth, but otherwise of doubtful phylogenetic affinity. Vermeulen & Whitten (1998: 140) exclude those Indonesian species which are probably assimineids (genus *Anaglyphula* Rensch, 1932). The remaining Southeast Asiatic species can be divided into two groups, see also Pilsbry (1920b). These probably merit generic level, but a formal splitting would entail a worldwide survey of *Pupisoma* which is beyond the scope of this paper. We, therefore, only list the species as far as these are not listed in Vermeulen & Whitten (1998: 145):

Genus *Pupisoma* Stoliczka, 1873

Group A

Shell surface entirely pitted. Radial ribs, if any, on the first whorls only, with periostomal crest. Aperture without teeth, or with 1-2 teeth: a parietalis, and a columellaris.

Pupisoma gracile Haas, 1937

Pupisoma gracile Haas, 1937.

Vertigo calamianica Von Moellendorff, 1898 (nomen nudum); full references: see Pilsbry (1920: 367).

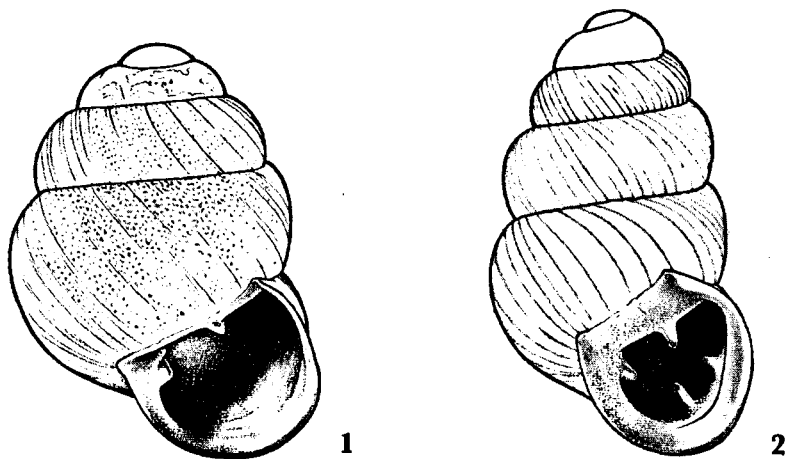
Distribution. — The Philippines.

Pupisoma lignicola (Stoliczka, 1871)

Pupa lignicola Stoliczka, 1871; full references: see Pilsbry (1920: 23).

Costigo moleculina Van Benthem Jutting, 1940.

Distribution. — India, Birma, Laos, Malaysia (Peninsular and Borneo), Indonesia (Java).
New records. — Laos. Bolikhamsay Prov., Houei Khoe near Laksao (leg. A.J. Whitten, colln Vermeulen 5220). Malaysia. Peninsular, Pulau Langkawi (colln Raven).



Figs. 1-2. Type species of the genera *Pupisoma* and *Costigo*. 1. *Pupisoma lignicola* (Stoliczka, 1871), Malaysia, Pulau Langkawi (colln Raven), shell 2.0 mm high. 2. *Costigo saparua* (Boettger, 1891), Indonesia, Tanimbar group (colln Vermeulen), shell 2.0 mm high. J.J. Vermeulen del.

Pupisoma pulvisculum (Issel, 1874)

Helix pulvisculum Issel, 1874; full references: see Pilsbry (1920: 30).

Distribution. — Malaysia (Borneo), Indonesia (Kalimantan).

Group B (Sect. *Ptychopatula* Pilsbry, 1920b)

Shell surface with growth lines, radial riblets, and spiral striation; protoconch pitted. Aperture without teeth. The Southeast Asiatic species are listed in Vermeulen & Whitten (1998: 145).

REFERENCES

- BENTHEM JUTTING, W.S.S. VAN, 1940. On a new species of *Costigo* (Gastropoda, Pulmonata) from Java. — *Treubia* 17: 331-332.
- BOETTGER, O., 1891. Ad. Strubell's Konchylien aus Java II und von den Molukken. — *Ber. Senckenb. Naturf. Ges.* 1891: 241-318.
- HAAS, F., 1937. Neue und kritische Pupilliden. — *Arch. Molluskenk.* 69: 2-12.
- PILSBRY, H.A., 1920a. Nesopupae of the East Indies and Philippines. Genus *Costigo*. — *Man. Conch.* (2) 25: 336-345, 366-367.
- , 1920b. *Pupisoma*. *Man. Conch.* (2) 26: 19-43.
- THOMPSON, F.G., & DANCE, S.P., 1983. Non-marine molluscs of Borneo II Pulmonata: Pupillidae, Clausiliidae; III Prosobranchia: Hydrocenidae, Helicinidae. — *Bull. Florida State Mus., Biol. Sci.* 29: 101-152.
- VERMEULEN, J.J., & A.J. WHITTEN, 1998. Fauna Malesiana guide to the land snails of Bali: i-ix, 1-164. Leiden.