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New records of a genus and a species of Neritidae (Mollusca: Gastropoda: Cycloneritimorpha) from the South China Sea

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Abstract

A neritid species *Vittina pennata* (von Born, 1778) is reported for the first time from the South China Sea. This is also the first report of this genus from Chinese waters. The specimen was collected from the Sanya Harbor, Hainan Province, China and deposited in Marine Biological Museum, Chinese Academy of Sciences. Detailed descriptions of its shell feature are presented. Differences between this species, *Vittina coromandeliana* and *Neritina pulligera* are compared and discussed.

Key words: Gastropoda, Neritidae, *Vittina*, *Vittina pennata*, new record, China seas

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1 Introduction

Gastropods from the family Neritidae Rafinesque, 1815 are generally euryhaline, occurring in marine, estuary and freshwater (Tan and Clements, 2008; Zhang, 2008). Species from the genus *Vittina* prefer to brackish or freshwater habitats. Currently, more than 20 species are known worldwide (Eichhorst, 2016a, b). While from China seas, no record of this genus has been reported, probably because there are very few systematic studies regarding the family Neritidae from this area (Chen et al., 2015, 2016). A variety of species have been reported from adjacent areas, such as four in Japan (Tsuchiya, 2000, 2017; Eichhorst, 2016b), eight in the Philippines (Springsteen and Leobrera, 1986; Eichhorst, 2008, 2016a, b). Benthos resources investigations in the South China Sea continuously performed for decades had accumulated vast amounts of neritids specimens. While examining the neritids collected from the area deposited in Marine Biological Museum, Chinese Academy of Sciences, we found a new record, *Vittina pennata* (von Born, 1778). Genus *Vittina* Baker, 1924 is recorded for the first time from China seas.

2 Materials and methods

The specimen is preserved air dried and deposited at the Marine Biological Museum (abbreviated MBM), Chinese Academy of Sciences, Qingdao, China. Based on the collection data, the distribution of the species from the South China Sea is illustrated in Fig. 1. Photographs were taken using Canon-EOS6D camera.

3 Taxonomy

Neritidae Rafinesque, 1815

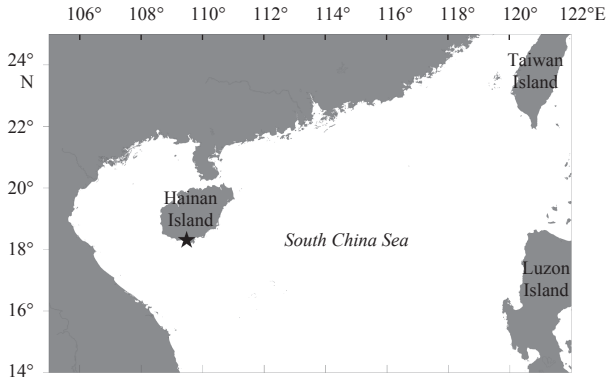

Fig. 1. Distribution of *Vittina pennata* (von Born, 1778) in the South China Sea.

Vittina Baker, 1924

Neritina (*Vittina*) Baker, 1924: 144; Springsteen and Leobrera, 1986: 50; Tsuchiya, 2000: 107; Tsuchiya, 2017: 783.

Vittina Baker, 1924: Eichhorst, 2008: 276–279; Eichhorst, 2016a: 9, 104; 2016b: 1075–1077.

Type species: *Nerita roissyana* Récluz, 1841, by original designation.

Diagnosis: Shell medium-sized, globular to elongate shape; spire low to high; surface generally with variety of colors and patterns.

Distribution: Indo-Pacific: China (South China Sea), Malaysia; Indonesia; Philippines, Japan. It is a new record for China.

Habitat: Estuarine and fresh water.

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Remarks: *Vittina* was proposed as a subgenus of genus *Neritina* at first by Baker (1924). It has the similar shell-form as *Vitta*, but has considerably distinct radula. Moreover, *Vittina* distributes in Indo-Pacific; while *Vitta* distributes in American and West African. There are few reports regarding this genus, and most accept *Vittina* as generic status (Eichhorst, 2008, 2016a, b).

***Vittina pennata* (von Born, 1778) (Fig. 2)**

Nerita pennata von Born, 1778: 420–421.

Nerita piperina Chemnitz, 1795: 173–174, Pl. 173, Pl. 197, Figs 1905–1906; Tryon, 1888: 59; Eichhorst, 2016b: 1093–1094.

Neritina piperina (Chemnitz): Sowerby, 1855: 518, Pl. 114, Figs 166, 167; Reeve, 1856: Pl. 4, Figs 19a, b.

Neritina pennata (von Born): Tryon, 1888: 59, Pl. 20, Fig. 33.

Vittina pennata (von Born): Eichhorst, 2016a: 9, 104; 2016b: 1093–1094, 1127, Pl. 337, Figs 1–12.

Type location: Unknown.

Material examined: MBM253905, 1 shell, Sanya Harbor, Hainan, China.

Diagnosis: Shell medium size, elongated-ovoid, 32.5 mm in length. Spire low, suture distinct between penultimate whorl and body whorl; body whorl inflated, almost full length of the shell, slightly constricted below the suture. Shell smooth with no spiral sculpture, growth lines visible. Shell surface covered with a blackish periostracum, part of body whorl yellow with variably sized black triangular patches. Aperture D-shaped, yellow; outer lip smooth interior with no dentition; inner lip smooth, parietal shield yellow with dark brown stain underneath, columellar edge slightly sunken in the middle with about 13 denticles. Operculum absent.

Distribution: It is only known from Borneo and Indonesia before. This is the first time it reported from Chinese waters.

Habitat: brackish water bay or lagoon.

Remarks: This species was first described by von Born as *Neritina pennata* in 1778. Besides the references mentioned above during the 18th and 19th century (Chemnitz, 1795; Sowerby, 1855; Reeve, 1856; Tryon, 1888), there are few more modern reports on this species (Eichhorst, 2016a, b), probably because of its narrow distribution.

Our specimen is a dead shell and the operculum is lost. According to Eichhorst (2016b), operculum of this species is tan to pale red in color, and appearance is smooth with fine axial growth striae and horn border (Fig. 2c).

The shell is covered with a blackish periostracum making triangular markings invisible, while surface of part of body whorl is yellow with distinct markings (Figs 2a, b). Eichhorst (2016a, b) considered that there appears to be a double layer of periostracum in *Vittina pennata* and called this thinner yellowish layer the second layer of periostracum. His research findings show that the final white shell is revealed if the inner layer is removed with bleach (Fig. 2d). This kind of periostracum is scarce in other marine neritids.

This species is similar to *Vittina coromandeliana* (G. B.

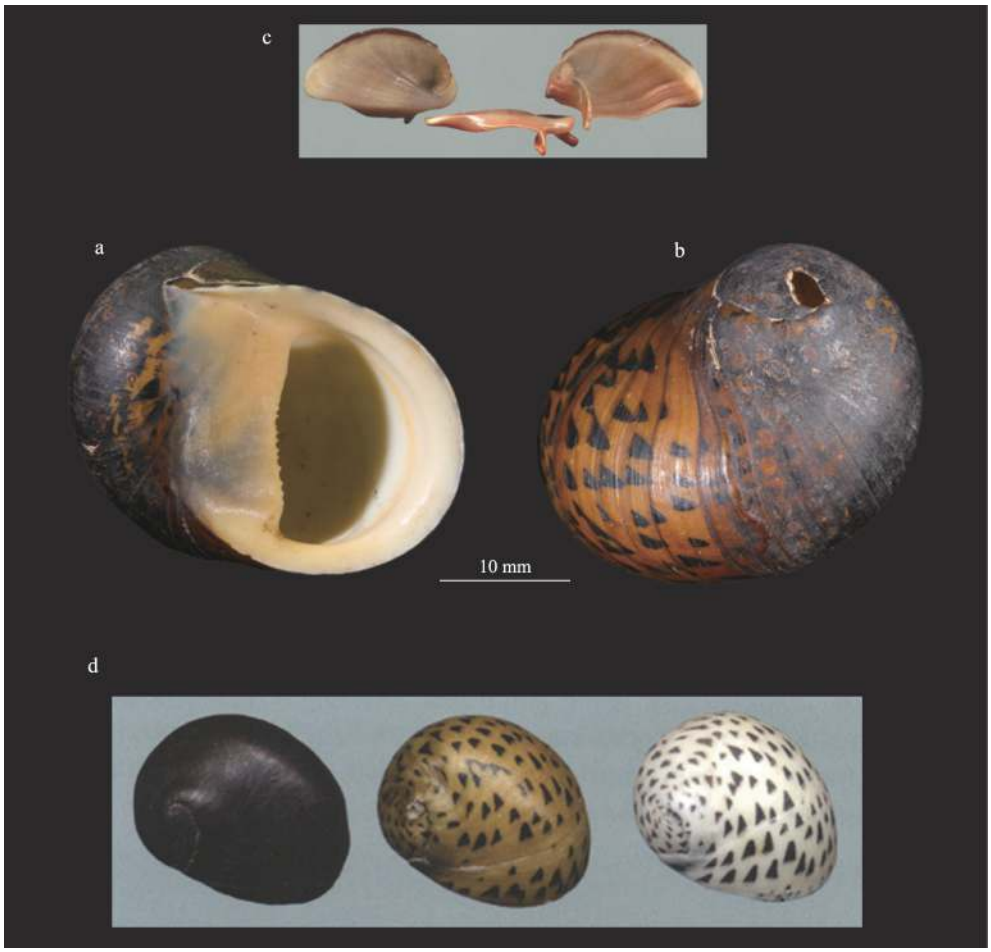

Fig. 2. *Vittina pennata* (von Born, 1778). a and b. Ventral and dorsal view of specimen from Hainan, China (MBM253905); c. operculum from different views, after Eichhorst (2016b); and d. shells with different colored periostracum after Eichhorst (2016a).

Sowerby I, 1836) whose shells occasionally have the semblable triangular markings which is relatively stable in the former; nevertheless, *Vittina coromandeliana* has variable colours and patterns with relatively much prominent spire and gray aperture, while *Vittina pennata* has lower spire and yellow aperture.

Taiwan Biodiversity Information Facility-TaiBIF (2017) listed *Vittina pennata* as synonym of *Neritina pulligera* (Linnaeus, 1767). Based on our examination and comparison, we found distinct differences on morphology and distribution between the two neritids (Table 1).

Table 1. Identification of *Vittina pennata* (von Born, 1778) and *Neritina pulligera* (Linnaeus, 1767)

	Vittina pennata (von Born, 1778)	*Neritina pulligera* (Linnaeus, 1767)
Shell spire	low, higher than the outer lip	flat, lower than the outer lip
Parietal shelf	small than the aperture; yellow with dark brown stain underneath	larger than the aperture; dark brown or black
Operculum	tan to pale red	greenish yellow with dark spiral bands
Distribution	Indonesia, Borneo and China (Hainan Island)	China (Taiwan), Japan, the Philippines, Indonesia, New Guinea and Vanuatu

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