

SPECIES OF THE BIVALVE FAMILY PTERIIDAE COMMONLY FOUND IN VIETNAMESE WATERS

Nguyen Chinh

Institute of Aquatic Products Research No.III

ABSTRACT

This paper identifies 8 species of pearl shells. Five of those species are attractive for culture in Vietnam: *Pteria penguin*, *P. bernhardi*, *Pinctada martensii*, *P. maxima* while three species have minor value: *Pinctada fucata*, *P. tegulata*, and *P. alacorvi*.

INTRODUCTION

The bivalve family Pteriidae (Mollusca: Mytiloida) includes various species of great economic value because of their capability to produce pearls (Nguyen 1980; Fishery Ministry of VietNam 1996). The Vietnamese pearl culture started in 1992 using the species *Pinctada martensii* and *P. maxima*. The culture has been successful thanks to favourable natural conditions. It is therefore anticipated that Vietnam's pearl shell cultivating industry will expand with other species than those two.

Specimens of Pteriidae were collected during 1964-1997 from the waters of Quang Ninh, Hai Phong, Phu Yen, Khanh Hoa, Binh Thuan, and Kien Giang. The pearl shells were mainly collected by diving, which facilitates observation of the distribution pattern of each species according to water depths, salinity, and specific habitats. A total of 8 species were identified. The specimens are kept in the reference collections of the Institute of Aquatic Products Research No.III (RIA 3) and the Nha Trang Fisheries University.

TAXONOMIC ACCOUNT

Pteria penguin (Röding, 1798)

Fig. 1

P. macropteria Lamarck, 1819

P. bennetti Iredale, 1939

Common name: Large winged pearl shell

Description: Shell large, odd-outlined, may reach 200-250 mm in height. Anterior ear small, posterior ear elongated from the top of the left valve to the posterior margin of the interior side of the valve, forming a broad raised ridge. Exterior black; periostracum developing into a fur; inner surface smooth, glossy, nacreous silver.

General distribution: Commonly found in the waters of South China, Japan, Taiwan, the Philippines.

Distribution in Vietnam: Coastal waters of Central Vietnam. Records from Bim Son (Thanh Hoa Province), Phan Thiet (Binh Thuan Province)

Commercial aspects: *Pteria penguin*, is used for producing artificial pearls. Valuable fine-arts objects are made from the shells.



Figure 1. *Pteria penguin* (Röding, 1798)

Pteria bernhardi Iredale, 1939

Fig. 2

Common name: Bernhard's pearl shell

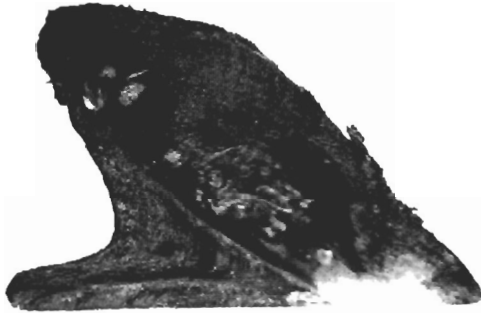


Figure 2. *Pteria bernhardi* Iredale, 1939

Description: Shells thin, average size of Vietnamese specimens 65 mm in length, 85 mm in height, 16 mm in breadth. Anterior ear well developed, unsightly. A coarsely sculptured ridge extends from behind the shell top to the inner shell surface. Posterior ear has the shape of an acute-angled triangle. Growth lamellae coarse; shell margins corrugated.

Habitat: Attach in large numbers to cages used in culture of *Pinctada martensii*.

General distribution: Commonly found in the waters of North Australia.

Distribution in Vietnam: Remarkably common in waters along the central coast; Nhatrang (Khanh Hoa), Vung Ro (Phu Yen)

Commercial aspects: Valuable fine-arts objects are made from the shells.

Pinctada martensii (Dunker, 1882)

Fig. 3

Avicula (Meleagriana) martensii Dunker, 1882.

Description: Shell quadrangle-shaped; adult reaches 66 mm in length, 75 mm in height, 25 mm in width; posterior ear larger than anterior one. Right valve small and relatively flat; left valve larger and concave; outer shell surface light yellow intercalate with black-purple lines. Growth lines in the

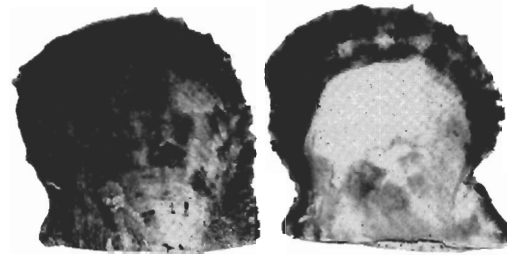


Figure 3. *Pinctada martensii* (Dunker, 1882)

vicinity of shell margins overlapping and somewhat projecting outward. Byssal orifice large; byssus bluish-violet with fine filaments tightly arranged into a tuft. Interior shell surface smooth, nacreous silver- ligament large, elliptical, located in shell centre but directed backward.

Habitat: Shallow water 1-15 meters depth; salinity 25-30‰; sea bed silty. Attach to the substratum by byssus. They cling to each other at high densities.

General distribution: Japanese waters, and along the coast of Quang Dong, China (Zhang & Ji 1960, 1962)

Distribution in Vietnam: The archipelago of Coto (Quang Ninh Province), Ham Tan, Phan Thiet (Binh Thuan Province).

Commercial aspects: The species can produce artificial pearls. The pearl industry in Vietnam started with *P. martensii*

Pinctada maxima (Jameson, 1901)

Fig. 4

Common name: Golden lip pearl or yellow lip pearl shell



Figure 4. *Pinctada maxima* (Jameson, 1901)

Description: Large species reaching 300 mm in length; rounded, oblate shape. Anterior ear prominently visible; posterior ear weak, almost indistinguishable. Growth lines sparsely arranged. Exterior yellowish-brown; interior nacreous silver. Adult shell margin nacreous golden.

Habitat: Occurs on silty sea bed at water depths of 20-35 m.

General distribution: Taiwan to Malaysia, Northwest Australia (Springsteen & Leobrera 1986)

Distribution in Vietnam: From Quang Nam to Phu Quoc Island, Kien Giang; Nha Trang (Khanh Hoa Province); Phan Thiet, Phu Qui (Binh Thuan province).

Commercial aspects: *Pinctada maxima* is of great economic value; the price of each shell being 7-10 US\$. It is the main species for the production of valuable whole pearls, which with success have been produced in Nha Trang.

Pinctada margaritifera (Linné, 1758)

Fig. 5

Mytilus margaritifera Linné, 1758.

Common name: Black lip pearl shell

Description: Shell Large, thick, solid, somewhat rounded; shell height and length almost identical. Adult reaches around 145

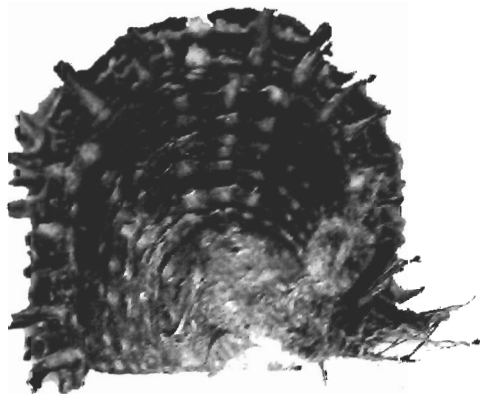


Figure 5. *Pinctada margaritifera* (Linné, 1758)

mm in length, 40 mm in width. Shell top curves forward; lower part below the right valve top concave. Byssal orifice deep. Posterior shell ear big. Exterior dark-brown; growth lamellae scaly, closely arranged. Interior with radiant lines, black-brown around the margins, hence the common name.

Habitat: Subtidal to a depth of 20 m. Attached to rocks or corals by byssus.

General distribution: Tropical waters in both northern and southern hemispheres (Habe & Kosuge 1996)

Distribution in Vietnam: Song Cau (Phu Yen Province), Nha Trang, Cam Ranh (Khanh Hoa Province), Phan Thiet (Binh Thuan Province).

Commercial aspects: Can serve as producers of artificial pearls, which are highly valued. Shells used for marking fine-arts objects.

Pinctada fucata (Gould, 1850)

Fig. 6

Common name: Japanese pearl oyster



Figure 6. *Pinctada fucata* (Gould, 1850)

Description: Shell quadrangle-shaped, thin, 60 mm in length, 70 mm in height, 20 mm in width. Anterior ear small, triangle-shaped; posterior ear close to back of valve. Byssal orifice deep. Exterior black-brown with darker radiant bands. Interior nacreous; shell margin dark-black.

Habitat: They attach indiscriminately to *P. martensii* cultivating chains.

General distribution: Indian and Pacific waters.

Distribution in Vietnam: Very common in Vung Ro (Phu Yen Province).

Commercial aspects: Since the shells are thin, fragile and small, they are difficult to cultivate for pearls.

Pinctada tegulata (Reeve, 1857)

Fig. 7

Avicula tegulata Reeve, 1857

Description: Shell thin, squarish shape. Adult may reach 95 mm in length, 85 mm in height, 25 mm in breadth. Anterior ear

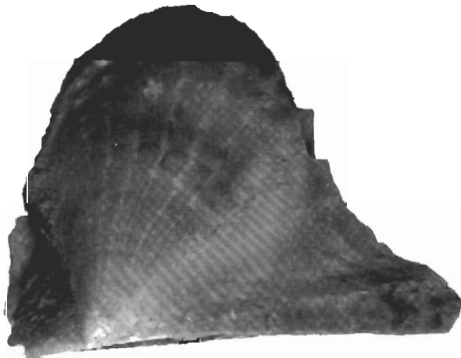


Figure 7. *Pinctada tegulata* (Reeve, 1857)

small, posterior ear large. Right valve flat, left valve concave. Periostracum yellow; growth lamellae finely sculptured with around 10 radiant lines. Interior nacreous ash-white; ligament long.

General distribution: Tropical Pacific waters
Distribution in Vietnam: Nha Trang (Khanh Hoa Province), Bim Son (Thanh Hoa Province).

Commercial aspects: It is of little economic value because the shell is thin and fragile.

Pinctada alacorvi (Dillwyn, 1817)

Fig. 8

Mytilus ala-corvi Dillwyn, 1817.

Description: Shell small, elongate, rectangle-shaped, resembling a duck's beak, thin, fragile, translucent. Adult shell reaches 60

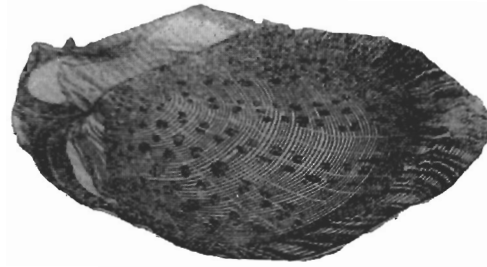


Figure 8. *Pinctada alacorvi* (Dillwyn, 1817)

mm in height, 30 mm in length, 14 mm in breadth. Right valve flat, left valve slightly concave. Shell surface smooth, glossy with dark-blue radiant bands. Shell margin suffused with radiant lines. Interior surface nacreous silver.

Habitat: Subtidal to a depth of 20 m.

General distribution: Red Sea, Indian Ocean, North Australia waters.

Distribution in Vietnam: Nha Trang (Khanh Hoa Province), Phan Thiet (Binh Thuan Province)

Commercial aspects: Little economic value because of small-size and thin shells.

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