

## Pearls in freshwater mussels *Lamellidens marginalis* in India (Bivalvia: Unionidae)

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In the southern parts of West Bengal, 3962 individuals of *Lamellidens marginalis* were checked for the presence of pearls; 173 or 4.37% appeared to contain pearls, viz., 1 with 4 pearls, 5 with 3 pearls, 21 with 2 pearls, and 146 with 1 pearl. The pearls had weights from 0.8 to 10 mg. It is concluded that pearl fishery or culture in West Bengal may give rise to a viable industry.

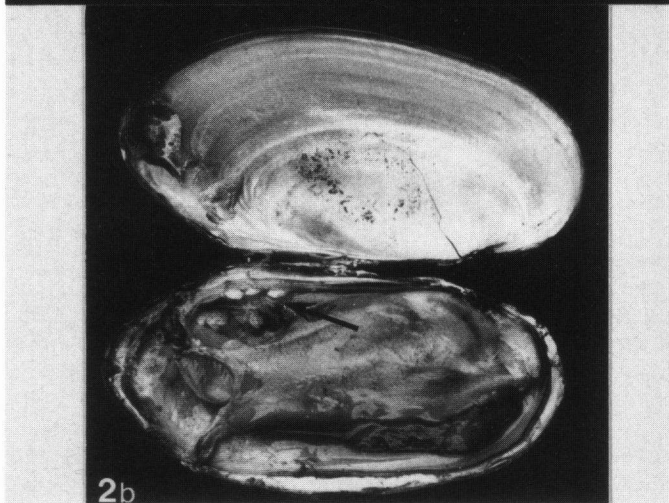
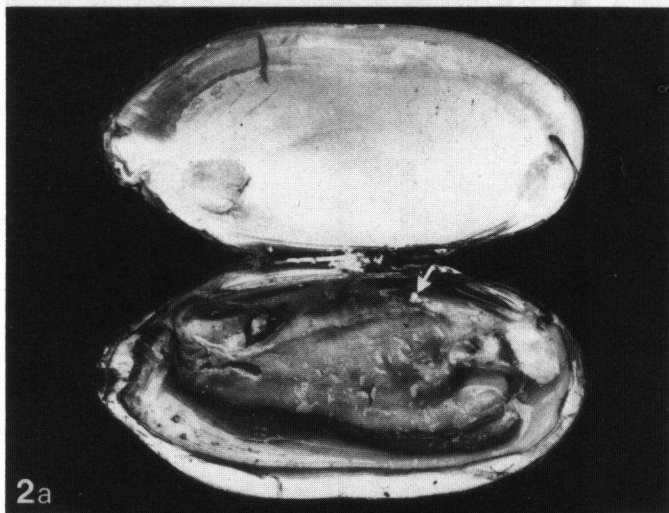
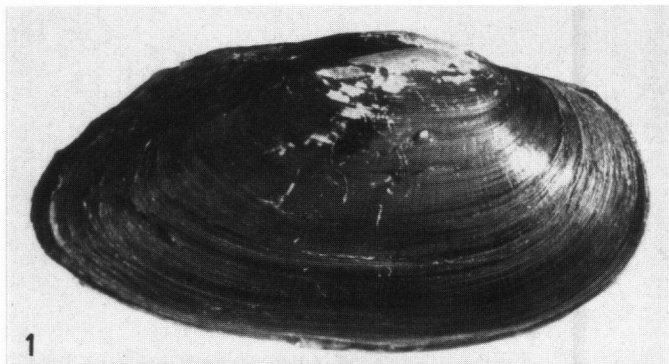
Key words: Bivalvia, Unionidae, *Lamellidens marginalis*, pearls, pearl fishery, pearl culture, India.

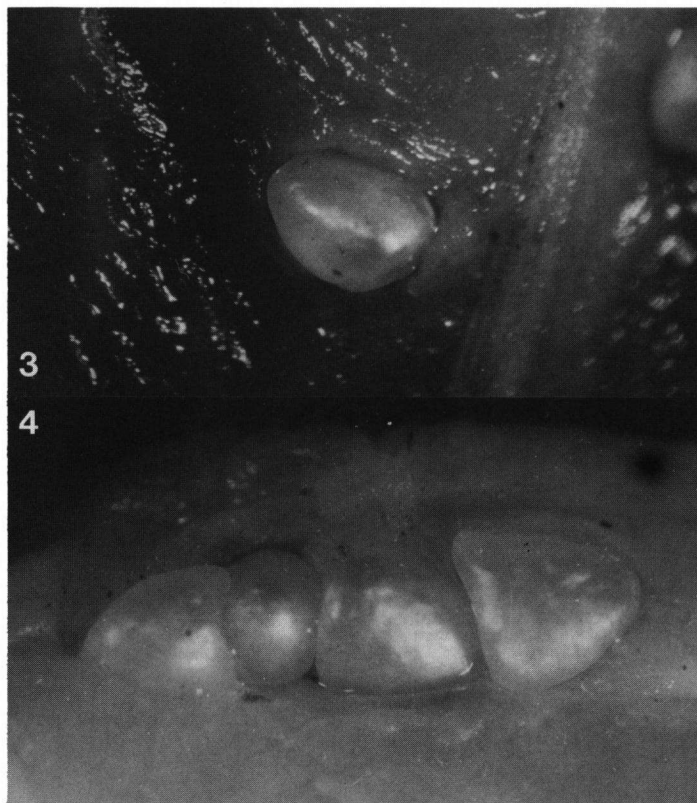
In the course of ecological studies of the freshwater mussels in West Bengal, India, the authors have collected pearls from natural populations of the unionid mussel *Lamellidens marginalis* (Lamarck, 1819) inhabiting different water bodies. The percentage of occurrence of the pearls in these mussels, the shape, size, weight and quality of the pearls are described in this note.

The mussels (fig. 1) were collected at random from different water bodies (mostly from ponds) in the southern parts of West Bengal. They were examined in the laboratory. The length, breadth and total body weight of these mussels were recorded individually before they were sacrificed; the shape, weight and quality of the pearls, when present, have also been noted against the individual mussels concerned.

A total of 3962 *L. marginalis* was examined in the course of the investigation (see table 1 for numbers obtained at the various localities and numbers of mussels with pearls). Out of 173 (4.37% of the total number) pearl-bearing individuals (fig. 2) 1 had 4 pearls (fig. 4), 5 had 3 pearls (fig. 2b), 21 had 2 pearls and the remaining individuals had 1 pearl each (figs. 2a, 3). The pearl-bearing mussels were 6.4-9.3 cm long, 3.1-4.7 cm wide (width of closed specimens) and weighed 26.34-60.84 g. The pearls were either spherical or elongate in shape and creamy white to light pink in colour. The weight of these pearls ranged between 0.8 and 10 mg (see table 1 for size). In the case of three pearls in one specimen, the maximum total weight of these pearls was 15.5 mg. All pearls were found inside the shell in an upper marginal position, i.e. in the neighbourhood of the hinge.

Pearls are formed in a number of species of molluscs, both marine and freshwater forms (Cahn, 1949; Nair & Rao, 1974; Coomans, 1975; etc.). Certain species of marine bivalves are still being used in pearl culture. Though some attention has been given to develop a freshwater pearl fishery in the Philippines, a report on its commercial success is still wanting. Since rearing of freshwater mussels in small water bodies is not a problem, and since an average of more than 4% of the mussels are bearing pearl under natural conditions in West Bengal, the possibility of pearl production in *L. marginalis* through cultural practices in India, can not be ruled out. More specifically, pearl fishery in 24-Parganas districts through the culture of *L. marginalis* may give rise to a viable industry.





Figs. 3-4. *Lamellidens marginalis* (Lamarck), West Bengal, India. Examples of pearls in situ, viz. one (fig. 3) and four (fig. 4) respectively, both  $\times 16$ .

Figs. 1-2. *Lamellidens marginalis* (Lamarck), West Bengal, India. 1. Outside of shell, natural size. 2, Inside of individual with one pearl (2a, arrow) and with three pearls (2b, arrows), slightly less than natural size.

| District            | No. of mussels examined | No. of pearl bearing mussels + percentage | Range of measurements of pearl bearing mussels |                    |             |                       | Range of measurements of the pearls |                |                |                |                       |
|---------------------|-------------------------|---|--|--------------------|-------------|-----------------------|-------------------------------------|----------------|----------------|----------------|-----------------------|
|                     |                         |   | Shell length (cm)                              | Shell breadth (cm) | Height (cm) | Total body weight (g) | Shape of the pearls                 | Diameter (mm)  | Length (mm)    | Breadth (mm)   | Weight (mg)           |
| 24-Parganas (South) | 1008                    | 68<br>6.75%                               | 6.9-9.3  | 2.2-3.2            | 3.5-4.8     | 24.0-70.84            | Spherical (23)*<br>Elongate (45)    | 0.72-2.4<br>—  | —<br>0.88-3.6  | —<br>0.65-1.66 | 0.96-10.0<br>0.91-9.5 |
| 24-Parganas (North) | 650                     | 26<br>4.00%                               | 6.9-9.1  | 2.4-3.3            | 3.5-4.5     | 23.6-67.2             | Spherical (10)<br>Elongate (16)     | 0.69-2.2<br>—  | —<br>0.91-3.5  | —<br>0.51-1.46 | 0.88-8.7<br>1.12-9.7  |
| Nadia               | 746                     | 31<br>4.15%                               | 6.7-8.6  | 2.4-3.0            | 3.4-4.4     | 21.5-55.0             | Spherical (11)<br>Elongate (20)     | 0.66-0.84<br>— | —<br>0.48-1.65 | —<br>0.32-1.04 | 0.83-3.2<br>0.96-3.6  |
| Hooghly             | 800                     | 19<br>2.37%                               | 6.8-8.4  | 2.3-2.9            | 3.5-4.3     | 21.6-56.4             | Spherical (12)<br>Elongate (7)      | 0.78-0.92<br>— | —<br>0.84-2.0  | —<br>0.41-0.98 | 0.91-3.8<br>0.88-4.5  |
| Burdwan             | 419                     | 11<br>2.62%                               | 6.7-8.6  | 2.3-3.1            | 3.4-4.3     | 21.2-53.0             | Spherical (4)<br>Elongate (7)       | 0.74-1.2<br>—  | —<br>0.95-3.1  | —<br>0.71-1.32 | 0.80-5.6<br>1.21-8.5  |
| Midnapore           | 339                     | 18<br>5.31%                               | 6.4-8.3  | 2.1-2.9            | 3.3-4.2     | 20.3-52.5             | Spherical (7)<br>Elongate (11)      | 0.71-0.92<br>— | —<br>0.56-2.3  | —<br>0.48-1.11 | 0.80-3.6<br>0.80-6.3  |
|                     |                         | 3962                                      | 173 = 4.37%                                    |                    |             |                       |                                     |                |                |                |                       |

\* Figures in parentheses indicate the number of pearls examined.

Table 1. Data on the features of the pearls in relation to the size and weight of *Lamellidens marginalis* from six districts of West Bengal, India.

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