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The window-pane (*kapis* shell) industry

By **RIY Adan**

Philippines' once thriving window-pane oyster or *kapis* shell industry still has a chance to be revived – if and only if there is a concerted effort from the people to save it. Research has done its job – now, the people has to do its share. This is the only solution left if the country wants this shell industry back.

The industry

Window-pane oyster or *kapis* shell (*Placuna placenta*) is a bivalve mollusc commercially and economically important because of its translucent shell.

Kapis shells are used as raw materials for home decoration and construction. They can be made into beautiful handicrafts like window sills, lamp shades, flower vases, chandeliers, chessboards, glass covers and coasters, wind chimes, wall panels, ashtrays, among others. They can also be used for making animal glue, chalk, shellack, soldering lead, and paint. These shellcraft products are exported to the USA, Japan, West Germany, and other European countries.

Kapis shells gathered from the wild are dried and graded according to quality and size. Proper handling of the shells should be ensured to get its maximum value. Shells that square above 75 mm are classified as first class while those that square less than 60 mm are graded as fourth class. Empty shells are soaked overnight in freshwater, scraped to produce the desired luster and rubbed against a rock or earthen jar to smoothen the edges.

For *kapis* to open naturally, the shells are dried, thus avoiding damage to the shells while the meat inside is removed. The meat is edible and has a higher protein content (23.2 g per 100g of fresh meat) than mussel and oyster. However, it is sacrificed during drying, but not wasted. It is often made as a component for poultry and shrimp feeds.

Distribution

The only source of *kapis* is wild stocks that used to abound in some selected areas. Window-pane shell is found in the Gulf of Aden around India, the Malay Peninsula, the southern coasts of China and along the northern coasts of Borneo to the Philippines.

There are 27 natural *kapis* beds in the Philippines. The major sources are found in Sapian Bay and Roxas City, Capiz; Oton and Tigbauan, Iloilo; San Miguel Bay, Camarines; Hinigaran and Pontevedra, Negros Occidental; Mangarin Bay, Mindoro Occidental; and Panguil bay, Misamis Occidental.

Kapis shells are found in muddy or sandy-muddy substratum in shallow areas or up to 100 m deep. They thrive best in

areas with bluish-soft mud (*lab-no*) or slightly sandy-muddy substratum.

Kapis shells are filter feeders. Their diet consist primarily of plankton and organic detritus, thus they need areas with high primary production devoid of macrobenthic algae and eel grass community. They are also highly prolific, and they spawn periodically. Sexes are separate though males and females are easily differentiated externally by the color of the gonad. Fertilizations occur externally; maturity commences at shell diameters of 70-100 mm but gonads are observed at sizes 50-80 mm.

Seedlings are usually collected during the first half of the year while bigger sizes and adults are gathered in the second half. They are usually found in bays, coves, and estuaries but not in sandy and or coralline areas.

Kapis shells can be cultured or transplanted in areas with the following physico-chemical parameters: water temperature, 24.5-30°C; salinity, 18–38 ppt; pH, 6.4–7.7; and dissolved oxygen, 2.5–5 ppm.

The larvae are planktonic for about 14 days. Juveniles and adult *kapis* are benthic and sedentary. They are incapable of spatial movement since newly settled juveniles have only feeble locomotor capability. In view of the inherent inability of post juveniles to move substantial distances, transplantation of segments of the population of a crowded area to a less densely populated one is beneficial. Density should be limited to approximately 150-200 per m² (1.5–2.0 million seedlings per ha) to allow normal growth and prevent overcrowding.

The downfall of the industry

Time was when *kapis* shells were among the Philippines' export products. In fact, *kapis* ranked fifth among the major fishery exports of the country in 1991, raking US\$35 million.

Today, however, their number is dwindling and worst, in some places have totally disappeared.

Overexploitation of *kapis* has been observed from the late 1970s until their disappearance in the late 1980s when the demand in the world market dramatically increased with the opening of the Japanese and European markets. With the high market demand, gatherers collected all they could – despite government's prohibition on the harvest of shell with sizes less than 80 mm and more than 100 mm - thus depleting the resource. Moreover, being an open-access type of fishery, harvest is not regulated.

Among other causes of *kapis* depletion are destructive methods of fishing and gathering such as trawling, use of mechanical

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plastic panels (35,000 pediveliger larvae per 1,000 l rearing tank). When juveniles are size 5 mm dia, they are transferred to 5,000 l splasher pools. Again when juveniles reach 10 mm dia they are transferred to be reared in 10,000 l concrete raceway tanks. In 8 months, juveniles reach 26 mm dia, and in two years, they reach market size of 70 mm.

Trochus production

Countries in the South Pacific are the principal source of trochus but other producer countries are Indonesia, the Philippines, India, and Thailand. The Japanese trochus, called “Macassar” is considered the best quality shell, it serves as a standard for prices of the other quality shells. Purchase price of the “Macassar” was US\$2,000 per ton in 1982, while South Pacific trochus was US\$1,200-1,650 per ton. In 1982, Japan imported 2,069 tons. Manufacturers of trochus buttons are Japan, Korea, Indonesia, Taiwan, United States, and Italy. In northern Italy, 210 firms produce buttons. In 1997, world export price of trochus was US\$6,000-7,5000 per ton.

Demand for trochus in the world market fluctuates. A market survey of 56 designers, fashion houses, button distributors, and upmarket retailers in Italy, France, Germany, the United Kingdom, Japan and the USA in 1997 had several findings regarding trochus demand:

- (a) economic constraints and fashion trends varies by country: in the US, economic considerations are the main factors while in France, fashion trends appear to be dominant
- (b) the fashion industry anticipates a high demand
- (c) substitution of alternative materials (plastic buttons) will not produce a major shock in the industry
- (d) more than half of the market believes that direct purchases for finished buttons from producing countries would be beneficial to them
- (e) consumers’ environmental concerns would affect demand.

Conclusion

The market projections and the state of aquaculture technology show the potential of trochus as an aquaculture commodity - a dollar earner and a source of food for subsistence coastal dwell-



The inner layer of the top shell is made into buttons

ers. As a dollar earner for developing countries, however, production would be dependent on high technology foreign manufacturers because processing from other countries such as the South Pacific cannot match “the long established and vertically integrated nature of the larger Japanese, Italian, and Spanish companies.” A study of the world market and the intricacies of marketing and processing of trochus can be studied and perhaps appreciated as a potential commodity for aquaculture in the Philippines and other neighboring countries.

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rakes and dredges, dynamite fishing and compressor diving. Trawling kills recruits and broodstock of *kapis* and destroys the substrate. Mechanical rakes and dredges have the same effect, while dynamite fishing reportedly caused massive *kapis* mortalities even in deeper waters. Compressor diving is also destructive if the divers are not selective of the *kapis* they gather. Siltation caused by heavy floods and typhoons contribute to mortality. Silt covers the entire shell and clogs the mantle and gills.

But there is hope yet; there are efforts to revive the industry by reseeding formerly abundant natural beds. SEAFDEC/AQD, for example, has been helping the local government units in southern Iloilo (see boxed story on page 25).

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