MARINE PEARL FARMS AT PHUKET ISLAND

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ABSTRACT

There are two major pearl farms: producing spherical and half pearls by use of Pinctada maxima Jamieson, 1901 and Pteria penguin Roding, 1798. Spat of Pinctada maxima is provided by Prachab Khiri Khan Aquaculture Center.

Pearl oyster species and distribution

Pearl oysters occur around islands in the Andaman Sea and the Gulf of Thailand. Five species of pearl oysters have been recorded: Pinctada fucata (Gould, 1850), P. radiata (Leech, 1841), P. margaritifera (Linnaeus, 1758), P. maxima (Jamieson, 1901), Pteria penguin (Röding, 1798). Among these, Pteria penguin is the most common species.

In the Andaman Sea, the oyster beds are located at Ko Payan in Ranong; Ko Pratang is Phung Nga, Ko Nga, Ko Khon, Laem Pan Wa in Phuket; Ko Phi Phi, Ko Phi, Ko Hong, Ko Lanta, Ko Mui in Krabi; Kao Yai, Ko Lepae in Satun and in the Gulf of Thailand are located at: Sametnair in Chon Buri; Ko Chan in Prachuap, Khiri Khan, Ko Samui in Suratthani. At Phuket island, pearl oyster beds are located in the areas near the pearl farms, east Ko Nga and southeast Laem Pan Wa of Phuket island. The oysters are collected, mainly by sea Gypsies, and sold to the pearl farms.


Pearl farms at Phuket

The oldest farm is located at Naga Island. It has 5,000 Pinctada maxima producing large spherical pearls every 18 months. The farm established co-operation with the Japanese 30 years ago. All the pearls are exported to Japan. A Japanese pearl technician has supervised Naga for 10 years. After implantation of nuclei, the oyster shells are rotated and cleaned every three months by the island's 25 trained workers. The oysters are suspended from wooden rafts. Naga Island produces the highest amount of fully-rounded pearls.

The farm also maintains 10,000 winged oysters, Pteria penguin for half pearl (mabe) production. The Krunpak Pearl Farm is located south of Naga Island. Krunpak grows both spherical and half pearls of good quality. The farm has 20,000 Pteria penguin and 10,000 Pinctada maxima pearl oysters. The farm is opened without Japanese investment.

Around Phuket Island, especially on the east coast at Ko Maphrao, there are a number of small family business which have specialized in half pearls. It takes about 14 months before such pearls can be harvested.

Pearl Oyster Hatchery

Prachab Khiri Khan Aquaculture Center has produced spat of Pinctada maxima since 1991. Exposure to air temperature, ammonium hydroxide, and serotonin injection, can induce spawning of the pearl oysters, although alternating exposure to air and seawater gives the best result (Nugwantow et al. 1991). Fertilized eggs develop to straight-hinge larvae within 18 hrs. Mean hatching rate is 51.33%. Metamorphosis takes place within 3 weeks. The spat grow to 0.5-0.8 mm shell length within one month and reach 0.8-1.0 and 2.0-2.6 cm as they are 2 and 3 months old respectively. The survival rate from D-shaped larval stage to settlement is around 3.5%. The survival from metamorphosis until 3 months old is approximately 0.2%.

Marketing and trade

Most spherical pearls are shipped off to Japan for processing and export to the world. The value of spherical pearls ranges from a hundred to several thousand US dollars while half pearls cost between 5 and 20 dollars. The quality of cultured pearls is decided by the thickness of nacre, iridescence, lustre, colour, size, shape and flaws. A good quality pearl must be...
heterogeneous and smooth. Stress on the pearl sac leads to the deformation of pearls. If the nucleus is located near the adductor muscle, the contractions may result in bursate pearls. Infection by micro-organisms may cause pearl-shorted or elongated pearls. Bacteria can lead to small gas bubbles enclosed in the nacre. The crenelation of the pearl is due to refraction of light from aragonite crystals. When the individual layer of organic matrix is thin, the light penetrates into the translucent crystals. Good lustre and refraction indicates that the nacre is composed of pure aragonite crystals. The colour of the nacre is mainly due to environmental factors, minerals, and trace elements. *Pinctada maxima* generally produce pearls with a diameter of 10-72 mm, but Naga Pearl farm produced one 48 mm pearl valued at US$ 20,000.

**ACKNOWLEDGEMENTS**

I thank Krungsak Pearl Farm and Naga Pearl farm for the opportunity to visit them; Mr. Likit Sanita, South Andaman Pearl for additional information; Ms. Jintana Nugraorad and Mr. Tatet Poompong, Prachus Khiri Khan Council Aquaculture Center, for hatchery information, and Mr. Hakorn R. Jalk for reading and improving an early draft of the manuscript.

**REFERENCES**


