

A glimpse into some sea cucumbers in Panay, Philippines

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Except for coastal dwellers, most Filipinos do not know what sea cucumbers (*Beche de Mer*, *Trepang*) are and how they look. Most must have dined on them at some time especially those affluent enough to dine out but were not aware of it. Its popular name *balat* is known only to traders and gatherers. This story attempts to give an idea of what sea cucumbers are, how they look, processed, and perhaps cultured. The culture aspect has been gathered from other countries because the Philippines does not culture it.

Sea cucumbers

Sea cucumbers are sea animals belonging to the families *Holothuridae* and *Stichopodidae*. They have worldwide distribution and found in large numbers in the Indo-west Pacific region. It is known to reach a maximum length of 400 mm and weight in live condition 500 g. It prefers sandy-muddy substratum and is often buried with the posterior end always above the surface of mud. It is known to prefer slightly less saline areas; smaller kinds are found near the shore. As they grow, they migrate to deeper waters for breeding. It breeds twice a year.



Sea cucumbers are gathered, partially processed, and traded in this town in Pandan, Antique in Panay Island. However, decreasing wild supply most likely due to

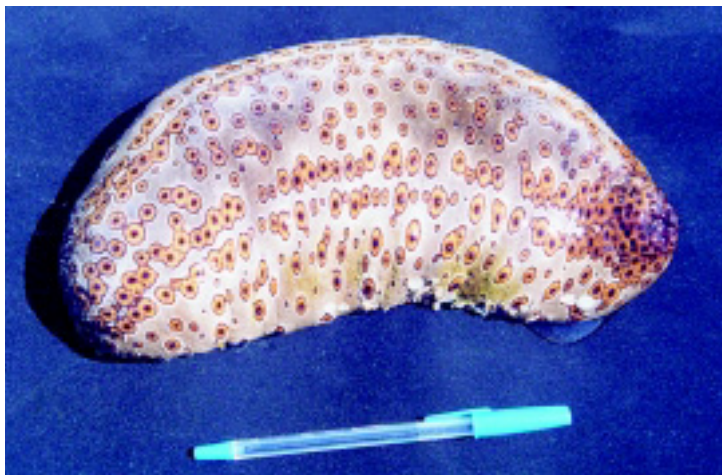
Sea cucumbers have been considered as delicacies for the past thousand years especially in Asia. In some countries, its industry is considered ancient, mainly originating from China.

Despite this history little is known about its science. Perhaps scientific studies in some countries have not been considered important because wild catch was plentiful and threats to its supply never occurred. The industry has flourished.

Today, widespread trading occurs in Hong Kong and Singapore, the two major export centers of sea cucumber in the world. Dried sea cucumbers are processed and reexported to the USA, Canada, Europe, Taiwan, Republic of Korea, China, Australia, Malaysia, Thailand, and others. In 1996, Philippine export of sea cucumbers was P125 million. Total export in 1958 was 5 tons, then jumped to 1,389 tons in 1996.

But the Asian economic crisis in 1997 drastically affected the catering business and demand for sea cucumbers decreased.

This may as well be, as this decrease would take off the pressure on sea cucumber resources for a while, being now in danger of depletion in many producing countries.



Two kinds of sea cucumber gathered in Pandan; their exact scientific names are not yet known



Sea cucumbers occur in many coastal places in the Philippines. In Pandan, Antique, west central Philippines, Nonio Antang, a local legislative member, traded dried sea cucumbers from 1988-1991. "Then," he said, "I sold 2-3 tons of dried sea cucumber per week during hot, summer days. I had several gatherers as sea cucumbers have been plentiful around here."

Mr. Antang mentioned eleven kinds that he encountered and traded, all of them edible. He said he didn't know of inedible ones because those caught around his home place were all edible.

He processed and dried what he sold. According to him, one must know the intricacies of drying or else all fresh stock would go to waste. He knew of several neighbors who attempted to dry them for business but failed because of faulty processing. He said that sea cucumbers are first boiled to its exact time (he said the duration is a secret), buried in the sand (shoreline) for a while to hasten decomposition of the thick outer membrane that causes a strong fishy smell, and dried in the hot sun for 1-2 hours. By then, he said, the sea cucumbers are as hard as a rock and ready to be sold to Chinese traders. He stopped trading and processing after 1991 because the traders did not pay him well, he said. He learned that the traders sold his sea cucumbers to the international market so much more than what they were paying him. "Today," he said, "the most expensive kinds sell for almost P1,000 per kilo while the cheapest sell for P300 per kilo."

Culture of sea cucumbers

In the Philippines, sea cucumbers have never been cultured, although it is one of the sources of dried sea cucumbers in the international market. Although the commodity is market driven, wild supply apparently has been sufficient for trading.

In countries like China and Japan, sea cucumbers are not cultured to marketable size. When length of 20-30 mm are reached in the hatchery, they are stocked in natural suitable areas for further growth and enriching of the natural populations. This is so because sea cucumbers grow slowly and maintaining them in closed conditions can be expensive.

In India, grow out culture is carried out in net boxes or tanks fixed with poles driven in 1 m depth in suitable areas. Tank culture is described, thus: An old one-ton tank is fixed at the bottom of the sea at 1.5 m depth. A rectangular frame, slightly larger than the box is fixed at the sea bottom and the tank slipped into the frame. One fourth of the tank is first filled with fine sand taken from the sea cucumber's natural habitat. The sand must be free from unwanted predators such as crabs. Fresh algae from the sea is dried, pulverized, and mixed with fine sand and transferred to the tank. The algal powder helps in the growth of the juveniles. The tank is covered by a fine mesh net to prevent entry of unwanted organisms. Sea cucumbers have been found to grow better in tanks than in cages and mortality lesser.

Successful grow-out culture is dependent on an efficient hatchery and nursery system. Breeders are carefully selected from the caught batch. They are stocked at 2-30 adults per tank). Only



Nonio Antang attests to the sea cucumber's lucrative market. He says traders dictate the price but gatherers and processors are measly paid

the best are chosen during the spawning season (March to May and October to December) since most of the specimens would be ripe and ready to release eggs. A

small rise in temperature is enough to induce them to spawn. At present, there is no known method to hasten the maturation process. Temperature stimulation is carried out by heating sea water with an immersion rod and hot water is carefully mixed with normal sea water to get the desired temperature. A rise of 3-5°C is enough to induce them to spawn. This is a widely used technique.

The larvae are fed the microalga *Isochrysis galbana*, and after 4-5 days, *Chaetoceros* sp. is mixed with the microalga. The quantity of the diet should be increased or decreased depending on the quantity of food in the stomach of the larvae. This can be visually checked before feeding them.

Temperature for rearing of the larvae should be 27-29°C. Temperature of the water must be checked twice during the day, morning and evening. Normal range of dissolved oxygen is 5-6 ppm. Aeration should be provided; one ton tank needs two aerators. Ideally, pH should be 7.5 to 8.6 but 6 to 9 can be tolerated; for salinity, 26- 33 ppt.

Sea cucumber larvae must be protected from predators like copepods and ciliates. They attack the larvae at the sides and injure them. These predators can be controlled by chemicals containing organophosphorus. The solution should be evenly sprinkled into tanks and the water of the tank must be completely changed after 2 hours, otherwise the juveniles would be affected.

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