

Penang Sangam High School
P.O. Box 44, Rakiraki
Year 13 Agriculture Lesson Notes Week 21

Strand	AS 13.4 Livestock Production
Sub-Strand	AS 13.4.1.2: River Mussels
Content Learning Outcome	Explore and outline the classification, species and the major groupings of river mussels in Fiji.

Lesson 1: Classification, species and river mussel major identification grouping

Like prawns and crabs, river mussels have very high demand in Fiji markets and commercializing its farming could solve the problem of poverty (food and income), meet market demands and improve living standards.

Knowing its classification and species present will enable the farmer to meet its growth needs.

Classification

Livestock: River mussel

Phylum: Mollusca

Class: Bivalvia

Order: Unionoida

Species common to Fiji

Batissa violacea

California floater (*Anodonta californiensis*)

Corbicula fluminea

Green mussel (*P. viridis*)

Lesson 2: Habitat and Feeding Method

B. violacea (Kai) has become a source of income to most families in Fiji. It is also a source of food and is mostly used in the traditional food preparation for chiefs in some parts of the Central group.

Habitat

The clam can be found in sandy or muddy beds of freshwater and brackish water, rivers and mangrove swamps and the bivalves increases its number when other water quality parameters are at optimum condition.

This indigenous freshwater clam *B. violacea* is ecologically important and has socio-economic and cultural values just like other mollusks.

Feeding

Like other bivalve (e.g *Mercenaria mercenaria*, *Lutraria philippinarum*), the clam burrows under the sand and extend its long siphon to the surface for feeding.

Lesson 3: Harvesting and Marketing

1. There are varying methods that the women use to dive for Kai and they mentioned the use of bamboo or a raft made from bamboo's to assist them in the collection
2. Collection of *B. violacea* is being done during sunny days in which water is calm, clear and the water level is low (low tied)
3. The time of collection is early in the morning from 6:00 - 7:00 a.m up to 12:00 -17:00 p.m.

Harvesting Method

The basic equipment often used to collect Kai include a

- (i) bamboo raft
- (ii) an underwater mask or swimming goggles
- (iii) a sack or cloth material to collect the Kai in and
- (iv) a neck basket

Common method used in Fiji is the use of 2-4 bamboo poles which are secured together firmly with an anchor line fastened to one end of the poles to avoid drifting. The anchor is fashioned out of metal or other heavy objects to allow for the small raft to remain stationary once a site with many Kai is located.

Other fishers use a larger bamboo raft which would require up to 8 or 9 bamboo poles. Once the raft is stationary, the fisher would then use a basket or material slung over the neck to allow for easy collection).

Once the fisher is out of breath or the basket is full, they would proceed to placing the catch into a sack or bigger basket that would either be hanging on the raft or sitting on the raft.

Causes of low catch

- natural occurrence such as typhoon, continuous raining, weather variability and flooding. The presence of these natural occurrences limits the collectors to gather the clam in the river otherwise their life will be at risk
- the collectors believe that the rapid water velocity during flooding could drag the clams to sand-point bar part of the river up to the sea resulting to mortality of clams
- another reason for the low abundance observed was due to the higher number of gatherers today as compared before

Recommendations

1. Control the operation of dredging in the river to maintain the supply of the clam in the province.
2. Regulate the size of clams harvested to allow the small clams to grow up to a marketable size which is highly valued.
3. Proportion of mature individuals be left in the river to allow natural breeding to take place.

Marketing

Once the Kai is brought home in the collection sacks, it is divided into piles through the use of 2L ice cream containers. A container full would constitute a pile of Kai valued at FJD5 at the local markets.

Due to the reduction in the number of villagers diving for Kai, the fishers stated that there is an abundance of Kai in the river beds now.

The price of one 50 Kg sack filled with Kai is normally \$50 and the price can increase to \$70 per sack when there aren't a lot of Kai in the market.

Lesson 4: Uses of River Mussels and Their By-Products

Uses of Kai – (B. violacea)

- ✓ food source
- ✓ income generation
- ✓ traditional food presentation

Uses of By Products

1. shells are usually used to open and straighten voivoi leaves used for mat weaving
2. used shells are usually neatly arranged outside homes of consumers to help hold the soil in place
3. it is also used to indicate to the home owners the presence of a visitor coming towards their home
4. shells are also used for decoration purposes