

# Successful Introduction of Mussels to Padre Burgos, Philippines

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*Perna viridis*, locally known as "tahong," has been cultured in the Philippines for the last 2 decades. At present, the intensive commercial culture of mussels has been limited mainly around three sites in the Philippines. The Bureau of Fisheries and Aquatic Resources (BFAR) is primarily responsible for the development and expansion of mussel culture here and has several experimental pilot farms now in existence throughout the archipelago.

One of these pilot farms is located at Port Laguimanoc, Padre Burgos, Quezon province. This project is a joint



Coconut husk spat collectors

venture between BFAR and the Marine Sciences Center (MSC) of the University of the Philippines. It is also supported by the U.S. Peace Corps. This farm was set up in 1978 under the supervision of the BFAR. Green mussels do not occur naturally in the area.

Throughout the past two years, mussels have been periodically introduced to this site from Cavite, about 150 km away. Originally the traditional bamboo staking technique was employed. However, we are now using the hanging technique and soon plan to experiment with raft culture. The raft method entails hanging culture ropes from a floating raft that is very mobile, releasing us from the confines of permanent structures and enabling us to move the mussels away from unfavorable water conditions. The raft method also greatly reduces predation.

## Site suitability

The selection of the Padre Burgos site for mussel culture was based on a number of criteria, including the results of an earlier Department of Natural Resources survey, which showed that approximately 12 km<sup>2</sup> are available for seafarming projects in the bay. Padre Burgos is surrounded by high hills which act as a wind break and help protect the water basin from the severe effects of typhoons and the associated strong wave action. The basin also experiences a good tidal flow, which is prerequisite for mussel

culture in providing transport of food, oxygen, waste removal and larval dispersal. From plankton examinations and various water parameter measurements, the area is believed to be capable of sustaining an extensive mussel culture program. In addition, there is a pier used by fishing boats to unload their catch for shipment to Manila or elsewhere, which would also facilitate the transport of mussels to market.

#### Successful spat settlement

In December 1979, our first spat settlement was recorded. Approximately 3,000 individuals settled out in two of the spat collecting areas. Young mussels were also recorded on the bottom of a fishing boat, and on rocks, dead coral and bamboo up to 3 km from the broodstock. This settlement of spat is small in terms of expectations, but it is a positive indication that mussels are capable of reproducing and settling in this area. From our growth rate experiments we have noted animals growing at the rate of 0.5-0.8 cm/mo. This favorable growth rate, and the promising spat settlement, indicate that the area is capable of supporting mussel culture.

Originally our farm consisted of a single structure, a 300 m<sup>2</sup> farm used

Below: Hanging culture facility, Padre Burgos. Right: Green mussels growing on tyre strip collectors.

to collect larvae and hold the breeders. We have also installed four new spat collecting structures within the bay, a new 150 m<sup>2</sup> farm situated farther up in the bay and a new 0.5 ha culture site. Many new spat collectors made from coconut husks and oyster shells are being placed on these structures.

Our introduced broodstock of mussels at the time of the first settlement numbered 15,000. Recently we introduced a further 20,000 breeders.

Placement of the additional structures was in view of the probability that the water currents were responsible for transporting our larvae out of the original farm site to some unknown area. After observing the current patterns we decided where the new



structures should be erected. In addition, the adult breeders have been moved farther up into the bay, hopefully reducing the number of larvae being lost to the open ocean. Several recorded occurrences of green mussels on rocks, dead coral and bamboo structures in the water far from our farms have proved that larvae are being carried away from our spat collecting sites and are also capable of traveling long distances.

Prior to the building of the additional structures, we knew that our mussels were growing well and capable of reproducing, as evidenced from our laboratory histological examinations. Time was needed to find out why they were not settling and to decide that the current system of the bay was the culprit in preventing settlement at our original farm site.

In the months since the first spatfall, we have been recording new settlement of spat, but not at great numbers. From plankton tows we also find a healthy supply of planktonic mussel larvae.

#### Future activities

Spat settlement, although small so far, is a strong positive indication that intensive mussel culture is feasible in Port Laguimanoc. Upon successful completion of this project, the results will be used to set up guidelines for the other sites not yet obtaining spat settlement and to assist in locating other areas throughout the islands which could be suitable for mussel culture.

After completion of our research we will also begin to instruct the local residents of the area in the technique of mussel culture. This will be a big benefit for those directly involved by increasing their incomes and providing a new cheap source of protein. An indirect effect will be the creation of many jobs for laborers needed to maintain the farms and harvest the mussels, bamboo dealers, retailers and wholesalers. This benefit will also be to the country as a whole since the project will expand the present supply of green mussels.