Aquaculture Development and Management in Laguna de Bay

Lennie C. Santos-Borja
Chief, Research and Development
Laguna Lake Development Authority
Email: redd@llda.gov.ph

First Living Lakes African Regional Conference

Kisumu - Mbita, KENYA
27-30 October, 2005
The Laguna de Bay catchment area: 3820 km²
Laguna de Bay Features

The Largest lake in the Philippines and one of the largest in Southeast Asia

- Average Depth: ~2.5 m.
- Average Volume: 2.25 MCM
- Shoreline: 285 km.
- Lake surface area: 900 km²
- Watershed area: ~2920 km²
- (24 sub-basins including many tributaries + a floodway)
- 6 provinces (including Metro Manila), 12 cities, 49 municipalities of which 27 are lakeshore towns and 2 are lakeshore cities
- One outlet: Napindan Channel – Pasig River
  (serves as inlet of saline water during Pasig River backflow)
Laguna de Bay is a multi-use resource but its dominant use is for fishery...
The Laguna Lake Development Authority

*The only lake basin management authority in the Philippines. Created in 1966 through Republic Act 4850.*
Flagship Programs

Environmental User Fee System

River Rehabilitation Program

Sustainable Fisheries Program

Shoreland Management Program
FISHERIES DEVELOPMENT PROGRAM

AQUACULTURE IN FISHPENS
History of Aquaculture operation

- Studies done in the late 1960’s showed that the primary producers of the lake were not fully utilized by the native fish population.

- There was a declining fish catch.

- Searched for methods to utilize the natural aquatic biota of the lake to support a more extensive fishery production, taking into consideration high economic return for fishermen as well as maintenance of ecological balance in the lake.
Aquaculture of milkfish (*Chanos chanos*) in fishpens was introduced - considered as a very viable approach to increase fishery production. Being a herbivore, it was believed that milkfish would not compete for the natural food source of the native species.

Likewise, under this condition, an extensive aquaculture can be supported by the lake.
Fishpen structure in Laguna de Bay
Harvest of milkfish in a fishpen
The culture of other species followed:

- Mid 1970’s - tilapia culture through fish cages using the “inverted mosquito net” and floating fish cage technique.

- 1980’s - bighead carp culture in fishpens
Aquaculture:

- intended to improve the livelihood of fishermen
- capital intensive
- no accompanying program for fishermen to finance the operation
- rich businessmen took over
- very profitable in the early years of operation
Fishermen asserted their rights on the use of traditional fishing grounds.

From a pilot area of 38 hectares in 1970, fish pens swelled to about 35,000 hectares in 1983.

Fishermen asserted their rights on the use of traditional fishing grounds.

Resulted to serious conflict between fishermen and the fishpen operators on access to fishing grounds which led to the death of some fishermen.
The proliferation and overcrowding of fishpens affected the fish yield. From a culture period of six months, it became one year or more to harvest milkfish in their marketable size.
MANAGEMENT CHALLENGE:

High economic return for fishermen as well as maintenance of ecological balance in the lake.

A zoning and management plan (ZOMAP) was implemented in 1983 – considered by far as the most feasible management system for equitable allocation of the fishery resource.
It took 12 years before the plan could be fully implemented due to:

- strong opposition from fishpen operators
- lack of political will, political influence and accommodation
- frequent change in the General Manager of the LLDA (political appointee)
- changing priorities
- poor monitoring
- conflicting laws
Fishpen area - 10,000 has.
Fishcage area - 5,000 has.
Salient Features:

Fishpen belt from 500 to 1000m from the shore with a total area allocation of 10,000 has. for fishpens.

Fishcage belt with total area allocation of 5,000.

Navigational lanes for easy access of open water fishermen to their traditional fishing grounds.
Area Allocation

Fishpen

a. Corporations - 50 has.

b. Individuals - 5 has.

c. Cooperatives - 25 has.

40 m distance between fishpens

Fishcage

Maximum area of 1.0 hectare

20 m distance on all sides

A one hectare fishcage area is allocated for every municipal Fisheries and Aquatic Resource Management Council
Establishment/Maintenance of Sanctuaries in Laguna de Bay (in has.)

- Talim Sanctuary - 5,000.00 has.
- Tabon Sanctuary - 126.27 has.
- Muntinlupa Sanctuary - 30.00 has.
Sharing scheme for annual fishpen and fishcage fee

Fishpen fee - P 6,000.00 (US $110.00)
Fishcage fee - P 4,000.00 (US $ 72.00)

*Thus, lakeshore municipalities with fishpen structures off their shores receive a total of 35% share
“Maraming Salamat Po!”
Asante Sana!
THANK YOU VERY MUCH!

Laguna Lake Development Authority
AC Santos-Borja