



# Attempts to manage *Ludong Fisheries* in the Philippines

Edna V. Agasen, Elmer B. Alba, Ronnie O. Romero

*Cestraeus* spp., locally known as “ludong” is a rare and indigenous migratory fish species caught in northern Philippines that commands very high price. It has been recently reported that the price of ludong in Cagayan Province (northernmost province of the Philippines) ranged from P2,000.00 to P3,000.00/kg (P50.00 = US\$1.00). Its exorbitant price makes the fish affordable only to the very rich Filipinos or to foreigners and politicians (it seems that politicians resorted to buying the fish as peace offering to government officials). This situation has led to the irresponsible exploitation of the fishery resource. With increasing threat of overexploitation and environmental degradation, the Philippine Government deemed it necessary to conduct a biological study and an assessment of the fisheries of this indigenous species for management and conservation purposes.

Cagayan River, confirmed the difficulty in identifying ludong based on morphological characteristics because *Cestraeus* spp. show almost similar characteristics, but confirmed that the species found in Cagayan River is *C. plicatilis*, supporting the findings of J.M. Thompson (1982). NFRDI is also conducting a DNA profiling of the ludong samples collected from Cagayan River.



1.3 kg gravid ludong caught by gill net in Cagayan River, northern Philippines (top); and actual gill net fishing operation in Cagayan River for catching ludong (above)

## Biology of Ludong

Ludong (*Cestraeus* spp.) is also known as lobed river mullet belonging to Family Mugilidae and recorded to be found in Asia especially in the Celebes Sea areas and New Caledonia. It migrates from freshwater to marine waters to spawn. Information on its fisheries and biology is very limited while research on its habitat and spawning is constrained by its low survival in captivity. The National Fisheries Research and Development Institute (NFRDI) as the research arm of the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) therefore initiated the country’s Ludong Fisheries Development Program for the conservation of this endangered fish species. Starting in 2006, NFRDI conducted a study to gather baseline information on *C. plicatilis* to serve as basis for the formulation of management measures to attain sustainability and develop fisheries to increase production.

Literatures have cited three species of ludong in the Philippines, namely, *Cestraeus oxyrhynchus*, *C. goldei*, and *C. plicatilis*. Preliminary results of NFRDI’s study in

## Modification of Traditional Fish Pot for Catching Ludong in Cagayan River

A related NFRDI study on the gears for freshwater fisheries resources in Cagayan River specifically in the Isabela Province and Cagayan Province areas, indicated that in Cagayan Province, gill nets were used for catching ludong, tilapia and carp; and traps (filter net, shrimp pots, traditional

fish pots) for catching shrimps, ludong, eel fry and tilapia. In Isabela Province, hook-and-line is used to catch ludong. The existing gears used for catching “ludong” in Cagayan River are not sustainable considering that the fish are already dead by the time these are taken from the net by hand, making the fish no longer useful for any biology and breeding studies. Another survey was conducted on the appropriate site for the installation of the fish pots in Cagayan River since it has been noted that the water depth of Cagayan River could be very high during floods and the amount of debris could also be large during flooding. The results indicated that it would be appropriate for the fishing gear to be set closer to the shore.

**Traditional bamboo fish pot**



The traditional bamboo fish pot has been used by fishermen in Cagayan Province for decades to catch “ludong”, carps and other freshwater species from Cagayan River. Also known as three-dimensional enticing device, this is constructed using bamboo splits and rattan woven into wickerwork like that of baskets. It is equipped with a non-return valve that allows trouble-free entrance but difficult to exit. The gear measures 1.2 m in diameter and 1.5 m long. The

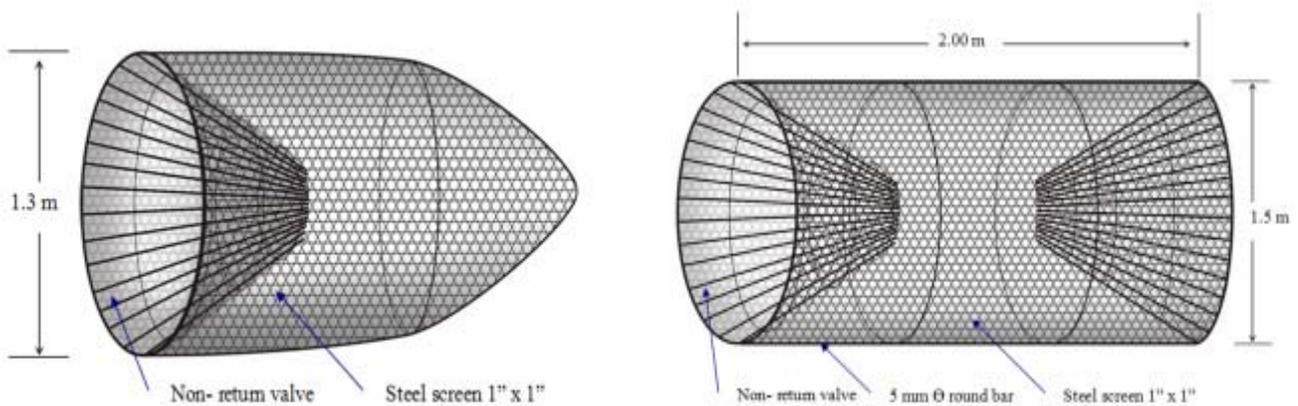
end part is pointed to minimize the entrance of floating debris serving also as attachment area for the anchor and retrieving ropes. This gear is good only in shallow waters approximately 2-4 fathoms depth with water current of 2-3 knots.

An exit door for taking out the catch is installed at the mid center of the non-return valve and the catch is directly collected using bare hands. Due to its weak construction, the gear is not very resistant to the river’s strong water currents and the pressure of the heavy debris occurring in the river especially during flooding.

**Steel single entrance fish pot**

As a modification of the traditional bamboo fish pot, the steel single entrance fish pot was tried in Cagayan River to catch live ludong. This gear has the same design and pattern as the traditional bamboo fish pot except that steel is used instead of bamboo and rattan.

This modified gear is supposed to resist strong water current and heavy debris and could be set in deeper waters that are approximately 5-8 fathoms deep. Its frame and braces are made of round steel bar 5 mm diameter and covered with steel screen, 0.5 mm diameter with mesh size of 1" x 1". The frames of the non-return valve or entrance are made of the same materials supported with bamboo splits. The exit or door for taking out the catch is located at the middle part and the rear part is pointed to lessen the entrance of floating debris and also for attaching the anchor and retrieving rope. A steel anchor approximately 15 kg is used in operating the gear, which is hauled and retrieved using retrieving ropes, 10 m long and 12 mm diameter or depending on the water depth. Flag markers determine the locations of the pot. Hauling is usually done after sunrise and before sunset by simply pulling off the retrieving ropes attached in between the



*Modified single entrance steel fish pot (left) and double entrance steel fish pot (right)*



Gilled “ludong” is removed from the net using bare hands

anchor and pots. This gear was found effective only when the “ludong” swims against the water current or after spawning in the sea.

### ***Steel double entrance fish pot***

Another modification was also tried, the double entrance steel fish pot. The gear has a total length of 2.00 m with a diameter of 1.50 m. The frames and braces are made of round steel bar 5.0 mm  $\phi$  and covered with steel screen, 0.6 mm  $\phi$  with mesh size of 1"x1". Entrance or non-return valves are installed at both ends with the same measurement as in the single type non-return valve. It is tubular in shape wherein the anchor is attached either in front or at the rear part of the pot. The exit or door opening for taking off the catch is located at the mid-center in between the ends of the two non-return valves. The operation of the gear is the same as that of the single entrance design and the gear has been found effective even when the target catch swims upstream or downstream.

### **Conclusion**

The two studies conducted by NFRDI in 2006 are still ongoing and are enhanced in 2007-2008. It is the desire of the Philippine Government to intensify these two activities in order to conserve the ludong fishery resource of the country. As part of the Ludong Fisheries Development Program, the NFRDI has lined up studies to be undertaken in the next five years. These include population genetics, broodstock development and breeding trials including development of hatchery and nursery techniques, and modification of traditional fishing methods in order to develop environment-friendly and selective fishing gear for catching

ludong in Cagayan River for breeding and culture purposes. Results of the studies will serve as basis in the formulation of management and conservation measures to attain sustainability and to develop the culture and breeding of this high valued species to increase production.

### **Related Readings**

- Conlu, P.V. 1986. Fishes. Guide to Philippine Flora and Fauna. Natural Resources Management Center, Ministry of Natural Resources and University of the Phil. Vol. IX. Quezon Ave., Quezon City. 495 pp.
- Harrison, I.J. and H. Senou, 1997. Order Mugiliformes. Mugilidae. Mulletts. p. 2069-2108. In K.E. Carpenter and V.H. Niem (eds.) FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 4. Bony fishes part 2 (Mugilidae to Carangidae). FAO, Rome.
- Ong, P.S., L.E. Afuang and R.G. Rosell-Ambal (eds.), 2002. Philippine biodiversity conservation priorities: a second iteration of the national biodiversity strategy and action plan..Dep't of Environment and Natural Resources-Protected Areas and Wildlife Bureau, Conservation Int Phi, Biodiversity Conservation Prog-University of the Philippines Cen. for Integrative and Dev't Studies, and Foundation for Phil Env't, Quezon City, Phil. 113 pp.

### **About The Authors**

**Edna V. Agasen** is a Senior Aquaculturist, Inland Fisheries Assessment Section of the Inland Fisheries and Aquaculture Research and Development Division, National Fisheries Research and Development Institute. She is the Project Leader for the Assessment and Biology of *Cestraeus plicatilis* “Ludong” and Other Indigenous Fish Species in Cagayan and Abra Rivers (northern Philippines).

**Elmer B. Alba** is the Officer-in-Charge of the Fishing Technology Research and Development Division, National Fisheries Research and Development Institute. He is the Project Leader for Experimental Capture of Live *Cestraeus plicatilis* “Ludong” in Cagayan River.

**Ronnie O. Romero** is Aquaculturist of the Fishing Gear and Methods Section, Fishing Gear Technology Research and Development Division, National Fisheries Research and Development Institute. He is the Assistant Project Leader for Experimental Capture of Live *Cestraeus plicatilis* “Ludong” in Cagayan River.