

Efforts to Preserve a Fishery Cultural Heritage in Myanmar: The “cooperative fishing” with Irrawaddy Dolphins

Mya Than Tun



Isn't it not wonderful to see river dolphins practically helping fishermen make bountiful fish catch? This is only through “cooperative fishing” in the Ayeyarwady River of Myanmar. So, if you are looking for a good fish catch from the Ayeyarwady River why not ask help from the Irrawaddy Dolphins.

The “cooperative fishing” by cast-net fishermen and the Irrawaddy Dolphins in Ayeyarwady River

Cooperative fishing between the Ayeyarwady dolphins (also known as Irrawaddy Dolphins) and cast-net fishermen in the Ayeyarwady River of Myanmar is a form of traditional fishing that has never been described in any world fisheries record. The Irrawaddy Dolphins, which are respected by the fishermen living in the shores of Ayeyarwady River, help them in their cast-net fishing in a cooperative way.

For the fishermen in the Ayeyarwady River, the key to a bountiful day's catch is not the bait used or their effort but it is the help they get from the Irrawaddy Dolphins. In the morning, a group of dolphins could be seen swimming downstream or upstream and upon reaching near the junction of the river's sand bar, the lead dolphin is seen hopping and searching for fishing canoes. The dolphins jump up from the water and make whole body twist (360 degrees turn) searching the horizon. The fishermen while still ashore,

call the dolphins by sending acoustic and audio signals (i.e., tapping the sides of their canoes) using a conical wooden pin or sometimes using lead weights, paddle or by making guttural sounds through their mouths. Usually, the dolphins respond positively to these calls through visual signals, communicating back through their body and several positions of their tail flukes. Some dolphins turn around near the canoes while lifting their flukes and waving left and right to the surface of the water. Slapping the water surface with their flukes, signals the desire of the dolphins to help the fishermen.

Upon seeing the dolphins swimming along the river, the fishermen follow the dolphins with their fishing canoes. If the dolphins can not find fish in one area, they show their fluke up and down to the surface very slowly and swim to another place. The fishermen understand that they are supposed to follow the swimming direction of the dolphins with their canoes. Upon finding an area and sensing that fish is abundant in that place, the dolphins show a signal for the fishermen to row their canoes back and forth especially when the dolphins show their flukes up the water surface pointing straight to the sky. This means that the fishermen should stop their canoes and wait for another signal for the proper time to throw their nets.

The understanding and cooperation between the Irrawaddy Dolphins and the cast-net fishermen in this cooperative fishing is a very unique and perhaps a very fascinating

culture. One lead dolphin swims in semi-circles driving the fish towards a certain direction while the other dolphins guard the fish from escaping the imaginary corrals made by the lead dolphins. Then the lead dolphins drive the herded concentrated mass of fish towards the direction of the fishing canoes and waving their half-submerged flukes signals the need for the fishermen to cast their nets. The fishermen then throw their nets timely and orderly to the school of fish.

Through this cooperative form of fishing, the fishermen said they could catch more fish with the help of the dolphins than without them.

Sometimes in one day, the fishermen could catch about 40 to 80 kg of fish. In fact some fishermen were saying that they could already live well for almost a month even without doing anything if they get such a good catch. Through this cooperative fishing, the dolphins herd fish to the fishermen, and the fishermen to the people. Cooperative fishing in the Ayeyarwady River of Myanmar is a mutually beneficial technique for both the fishermen and the dolphins and it has been passed on culturally through generations of humans and dolphins for a very long time.

The Irrawaddy Dolphins

The Irrawaddy Dolphin (*Orcaella brevirostris*) is a species of dolphin found near the coasts and in estuaries in some parts of Southeast Asia. It is usually 1.0 m long weighing about 10 kg at birth and about 2.3 m long at full maturity. An adult can weigh more than 130 kg and its life span is about 26-30 years. The Irrawaddy Dolphins are slow swimmers and surface the waters in a rolling motion. They lift their tail flukes clear of the water for a deep dive and spit streams of water through their mouths while spy-hopping. Although sometimes called Irrawaddy River

Dolphin, it is rather more of an oceanic dolphin that lives near the coasts and enters the rivers including the Ayeyarwady River (known before as Irrawaddy River, that's how the dolphin got its name) of Myanmar.

Commonly called „La Bine% in Myanmar, the Irrawaddy Dolphins eat the fish that are either stunned or darted away from the sinking cast-nets or from the mesh aperture of the nets. The dolphins always eat fishes entangled or half-protruding from the cast-net. When a dolphin bites the fish and the fish stretches its spine, the dolphin drops the fish and swims away. Dolphins never eat fish from the head and never eat spiny fish, they eat only the tail section of the fish. Since the benefit in terms of fish catch is shared among the dolphins and the fishermen, this form of fishing has always been known as „cooperative fishing.%

Fishermen in the Ayeyarwady River reported that the dolphins sometimes spy-hopped to check the surroundings of the nets while these are being lifted. It is therefore necessary that the nets should be pulled carefully and slowly while the dolphins are swimming slowly and checking the nets. The fishermen explained that the dolphins will never cooperate with them again if not enough time is given for them to check the nets. The fishermen said that it is necessary to keep the dolphins preoccupied in a certain way until the termination of the cooperative fishing. Making mostly guttural sounds during the fishing operation with their hands busy lifting the nets and rowing their canoes, is one way of making the dolphins engrossed in their activity.

Two fishermen operate the cast-net canoe for fishing, one rowing the boat from the back while the other stands in front observing the signal given by the dolphins. The dolphins could herd the fish for the fishermen for a few hours or sometimes for half day or even sometimes for one whole day. When fishing operation is over, the dolphins swim



Irrawaddy Dolphin (above); and fishermen following the response and direction given by the Irrawaddy Dolphin (right)



downstream or upstream and the fishermen let them swim away freely. There are however mornings when some dolphins are not interested to cooperate by not replying when some fishermen send signal to them because these dolphins may have been fishing the night before with some other fishermen. The fishermen also observed that some dolphins are willing to fish only at night time. The fishermen explained that they could already recognize each individual dolphin, the day-fishing dolphin or night-fishing dolphin, or some dolphins fishing day and night. The fishermen gave names to some individual dolphins, such as „Gote Htit Ma%” or dolphin with bigger head which could be more than 40 years old. Another dolphin is called „La Bine Nyi Naung%” or the dolphin’s brother and another „Bay Kyar Ma%” or dolphin with stripe on its side.

The Ayeyarwady River of Myanmar

Myanmar is one of the largest mainland countries in Southeast Asia with a land area of 656,577 km² and population of about 54 million (estimated) as of 2007. The country owes the richness of its fisheries to the extensive big river systems, such as the Ayeyarwady (2170 km long) and its tributaries, Chindwin (960 km), Sittaung (298 km), and Thanlwin (1274 km), originating from Mainland China. As the longest river in Myanmar, Ayeyarwady River traverses the entire length of the country from north to south to the Andaman Sea. The Ayeyarwady River is famous for its traditional cooperative fishing between the dolphins and local fishermen. Here, the fishermen and the dolphins maintain this practice of mutualism from generation to generation.

In the Ayeyarwady River of Myanmar, Irrawaddy Dolphins were first reported by John Anderson (1879) to inhabit no farther downstream than Pyay (Prome) during the low-water season and Yenangoung (about 450 km from the sea) during the high-water season. The earliest reference to the Irrawaddy Dolphin in Myanmar was in the New’s T’ang History (Chinese Text from „about 800 A.D%” as cited by Luce (1966)) that mentioned about traffic by „river-pigs%” among the ancient Pyu culture of Myanmar.

Dwindling Population of the Irrawaddy Dolphins of Myanmar

The Irrawaddy Dolphin population in Myanmar was reported to be decreasing and threatened by many environmental and human-created factors. It was feared that its decreasing population could result to the disappearance of the country’s culturally and economically important traditional cooperative fishing where „inter-species relationship%” between the dolphins and humans is strongly demonstrated. During the

surveys conducted in 2002 and 2004 by the Whale and Dolphin Conservation Society (WDCS) of the United Kingdom and the Wildlife Conservation Society (WCS), respectively, in conjunction with the Department of Fisheries of Myanmar, it was revealed that the dolphin population decreased by about 60% from its last known records and that only 37 individuals remained in a river area that stretches 1000 km from the sea. Based on such findings, the World Conservation Union (ICUN) in 2004 designated the Irrawaddy Dolphin population as „critically endangered%”. As a result, during the Thirteenth Meeting of the Conference of Parties (COP13) held in Bangkok, Thailand in October 2004, the Irrawaddy Dolphin was up-listed from the CITES Appendix II (list of species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled) to the CITES Appendix I (list of species that are most endangered among the CITES-listed animals and plants).

The most important factors that affect the dwindling population of the Irrawaddy Dolphins include mortality from irresponsible fishing gears such as the gill nets that entangle the dolphins. The preference of fishermen for gill nets anchored at the riverbeds over the traditional cast-nets indiscriminately trap the fishes, dolphins and other aquatic animals that swim into them. Furthermore, some destructive fishing practices such as the use of electricity have become rampant in the river areas without proper law enforcement. The high voltage used in electric fishing kills everything within range. With dead fishes floating in water surface, it is easy for the fishermen to collect their catch. The country’s lucrative gold mining industry in riverbeds has also contributed to the Irrawaddy Dolphin’s declining population. Mercury which is used to extract gold from the ores leaches into the river system slowly polluting the water and eventually poisoning the aquatic species including the dolphins. The gold mining operations in the riverbeds also resulted to loss of habitats of the animals as major changes in the geomorphic and hydrologic features of the river channels take place.

Operations in the gold mines are very noisy distracting the echo sounds that the dolphins used to detect and catch their prey as well as to communicate with the fishermen. The very noisy operations largely contributed to the extinction of the species as this interferes with their ability to catch their food. Nevertheless, the country’s local communities depend solely on the fishery resources for their livelihoods so it is not easy to immediately enforce the banning of gill nets and other fishing practices or even stopping the mining of gold as it contributes to the country’s economy and religious practice. But efforts are now being initiated by the Government of Myanmar to make the people understand

the need to implement conservation and management measures especially for the threatened Irrawaddy Dolphins and also to preserve the „cooperative fishing“ activity.

Efforts to conserve the Irrawaddy Dolphins and preserve “cooperative fishing”

The Department of Fisheries (DOF) of Myanmar has been designated to carry out the responsibility of promoting the conservation and management of the Irrawaddy Dolphins. Recognizing that the fishermen and the villagers love the dolphins as they provide them with economic benefits, but that the dolphin population has been critically endangered, the DOF considers it a challenge to implement effective conservation and management measures. Thus, in order to achieve its goal, the DOF collaborated with Wild Life Conservation Society (WCS) to protect and conserve the Irrawaddy Dolphins and the cast-net fishermen. In December 2005, the DOF and WCS established a protected area, about a 72 km segment of the Ayeyarwady River between Mingun and Kyaukmyaung, for the benefit of the Irrawaddy Dolphins and the cast-net fishermen. In this area, gill net fishing and gold mine operations are prohibited, while illegal fishing practices was completely banned. Since cooperative fishing occurs only in this 72-km stretch of the Ayeyarwady River and this area also supports about 22 to 32% of the total dolphin population in the river, this Mingun-Kyaukmyaung segment was the first area to be considered a protected area.

The conservation and management plan for the protected area includes regular consultation with the local people and stakeholders by the DOF officers and concerned authorities in order to raise the public’s awareness about the program. The DOF also asks the help of the monks to disseminate the information, as monks play a crucial role in the behavior of the people especially at the village level. The DOF Dolphin Conservation Team has been tasked to regularly conduct monitoring and surveillance as well as training the

fishers and other people living along the river on sustainable fishing methods. Printed banners on the need to preserve the „cooperative fishing“ practice have been put up for the people’s awareness while pamphlets about the program were distributed to the local communities. Another measure being implemented is the dolphin-based ecotourism, where tourists are treated to a first-hand experience of the traditional cooperative fishing. This is conducted in the Myay Zun Village in Mandalay Division. The cast-net fishermen are poor so by conducting the dolphin-based ecotourism showing their skills in cooperative fishing, they can generate certain income. But the dolphin-fishermen demonstration activity has been carefully managed to ensure that the dolphins are not harmed by harassment or collision with tourist boats, and that a significant portion of the economic benefits goes directly to the participating fishermen.

The ultimate goal of the management and conservation plan is to develop the cast-net fishing while conserving the Irrawaddy Dolphins thus, preserving the cultural heritage of cooperative fishing at the Ayeyarwady River of Myanmar. The DOF will exert more efforts to preserve the traditional cooperative fishing for the future generations. In order to sustain the implementation of the management and conservation plan, the DOF is inviting international and regional organizations to also collaborate in their efforts, especially in the monitoring of the dolphin stocks and in training the local fishers about sustainable fishing practices especially the people living near the protected area.

About The Author

Mya Than Tun is a Senior Fisheries Scientist of the Department of Fisheries of Myanmar, Sinmin Road, Ahlone Township, Yangon, Myanmar. She is also the Coordinator of the Ayeyarwady Conservation and Management Project and National Coordinator of the Bay of Bengal Large Marine Eco-system Programme of the FAO, GEF, World Bank, SIDA, NOAA.

