



The majestic Maria Cristina Falls (Lanao del Norte, Philippines), outlet of Lake Lanao towards Iligan Bay

The attachment of the Maranaos to Lake Lanao is insurmountable. American writer Washburn (1978) described the relationship between the Maranaos and their watering place, the Lake Lanao as: “To the Lake, the Maranaos have bound their identity. In their own eyes and in the eyes of the outsiders, they are Maranaos known as the Peoples of the Lake. On its shores, they established their villages and towns and built their mosques. With its water, they purify themselves for prayer. In its wetlands, they cultivate their rice. From its depths, they gather fish. Across its spans, they transport goods and people. From it they take water for drinking and cleaning. Each boulder and island in the Lake, each hill and valley in the land surrounding it is woven into the legend and epics of the people. Each Maranao can willingly trace his ancestry to the original “pat-a-pangampong,” the four encampments on the lake, their mythical founders, also known as the four winds, in the Maranao mythology that prevented the inundation of the Lake by cutting an outlet. Thus, it is with some justification and no little pride that the Maranaos consider the Lake Lanao as Our Lake.”

Agus River flows for 36.5 km from Lake Lanao to Iligan Bay cutting across the provinces of Lanao del Sur and Lanao del Norte. Settlements along the banks of the river include Marawi City (in Lanao del Sur), Linamon Municipality and Iligan City (both in Lanao del Norte). Before draining to Iligan Bay, the river descends for about 2,200 feet from its

source in two channels, one going over the Maria Cristina Falls while the other supplies the Linamon Falls. Agus River is relatively shallow (only 4 feet deep in some areas) and its watershed spans about 11,320.00 ha. It has a discharge of about 10 second-meters flowing from a narrow depression off the northwestern rim of the lake over a basalt rock formation. A long narrow valley has been etched by the river suggesting the occurrence of rock erosion.

Lake Lanao is used by the lake community settlements for small-scale as well as sports fishing, and to some extent for recreational activities such as boating and swimming. The Agus River, on the other hand, in its entirety except in very few areas known to have slow current, is not navigable because the current in most areas could reach a maximum of thirty miles per hour. Taking full advantage of the waters of Lake Lanao and Agus River, the Philippines’ National Power Corporation (NPC) has installed a number of hydroelectric plants in and near Lake Lanao as well as along the Agus River and near Maria Cristina Falls. Such hydroelectric plants and the requisite regulatory dams constructed by the NPC have changed the fluctuations of the water level of Lake Lanao, affecting the indigenous people and leading to conflicts between the NPC and the local peoples who have always depended on the Lake for their food and livelihood.

Biodiversity in Lake Lanao

FishBase (2003) cited that Lake Lanao is home to a highly unusual group of fishes known as a “species flock, and used to be home to 18 endemic fish species that cannot be found anywhere else. However, such species are now gone and several native species are becoming extinct including the *Puntius lindug*, *P. baoulan*, and *P. tumba*). The Lake Lanao eco-region is also home to 41 endemic freshwater crab species and supports a large number of waterfowls. The 18 species endemic fish species are thought to have evolved from one species, the spotted barb. The remaining major fish species found in Lake Lanao are shown in **Table 1**.

Table 1. Major fish species in Lake Lanao

Species	Family	Habitat	Total Length (cm)	Status
<i>Anabas testudineus</i>	Anabantidae	demersal	25	introduced
<i>Chanos chanos</i>	Chanidae	benthopelagic	220	native
<i>Cyprinus carpio</i>	Cyprinidae	benthopelagic	147	introduced
<i>Glossogobius giuris</i>	Gobiidae	demersal	61	introduced
<i>Hypseleotris agilis</i>	Eleotridae	demersal	8	native
<i>Micropterus salmoides</i>	Centrarchidae	benthopelagic	97	introduced
<i>Oreochromis niloticus</i>	Cichlidae	benthopelagic	74	introduced
<i>Puntius sirang</i>	Cyprinidae	benthopelagic	12	endemic
<i>Puntius tumba</i>	Cyprinidae	benthopelagic	16	endemic
<i>Trichogaster pectoralis</i>	Belontiidae	benthopelagic	25	introduced

Issues and Constraints

Marawi City used to be a municipality named Dansalan which means a “place of destination” or a rendezvous. According to a well-known Maranao scholar and Sociology Professor of MSU, the late Dr. Mamtua Saber, Marawi City was chartered in 1940, and later the official name of Dansalan was changed to Marawi through a congressional amendment in 1956 and embodied in Republic Act No. 1552 of 16 June 1956. Marawi City is an Islamic cultural center for Muslim Filipinos, and is popular for both its beautiful veiled Maranao women and the sparingly “hot political passion”.

The Mindanao State University (MSU) was established in the rolling hills overlooking Marawi City in 1961 for the main purpose of cultural integration among the Muslims and Christians as well as for the promotion of affordable higher education in Muslim Mindanao. MSU has been monitoring the ecological status of the Lake through its able researchers until some problems occurred including the uncontrolled exploitation of the Lake. In order to address the issue, various initiatives have been advanced by many individual persons, government agencies, the private sector, and the academe including the MSU to promote the ecological conservation of Lake Lanao. In related attempts to save the Lake from destructive human exploitations, researchers from MSU conducted a scientific study in October 2006, after receiving alarming reports on the massive algal contamination in the Lake (Gallardo, 2006).

The study was mainly aimed at preventing possible occurrence of an environmental disaster in Lake Lanao following reports of algal contamination of the lake waters. The study initially concluded that such phenomenon was caused by poor sewage and inadequate agricultural waste management. Such findings were however contradicted by the Department of Agriculture (DA) and the Bureau of Fisheries and Aquatic Resources (BFAR) through an environmental assessment report, indicating that the cause of the contamination was mainly soil erosion brought about by indiscriminate logging and extensive land use and irresponsible farming. The MSU researchers finally recommended that the “greening of the lake waters” should be checked as it could affect the lives of thousands of peoples in the lake communities who have always depended in the Lake for food and livelihood.

Agus River is the only outlet of Lake Lanao to the sea. From 1953 to 1978, the NPC has constructed five hydroelectric power plants along the Agus River with combined daily generating power capacity of more than 630 mega watts. During that period, there was no opposition to the NPC from operating the power plants because these were only

taking advantage and using the high-energy stream of the Agus River. After 1978, the fate of Lake Lanao changed when an NPC regulatory dam was constructed near the Lake at the mouth of the Agus River (Naga, 2008). When the dam became operational, the lake communities felt the impacts from the flooding and drying of the shorelines. The residents in the lake communities reported an unstable water condition in the Lake, citing that while before when there is more rain, more water outflows to the river, when there was less rain, less outflow, now the situation changed to the opposite and something which they consider as against the laws of nature.

The residents also believe that the lake condition would be worsened when the construction of Agus-1 (the sixth of the seven planned hydroelectric plants) was completed in 1979. The peoples in the lake communities rallied against and strongly opposed the operationalization of Agus-1 for it could lead to a potentially disastrous direction along environmental and social dislocations, considering that Agus-1 will not make use of the natural outflow of the water through Agus River but will draw water directly from the Lake. The volume and rate of the water that Agus-1 will draw from the Lake will be controlled by the human operators of Agus-1, which would virtually replace Agus River as the natural outlet of the Lake. Many Maranaos feel that the replacement of Agus River as an outlet by the human-controlled Agus-1 is an ecological nightmare with alarming consequences to man and the environment. Many Maranaos cited the situation as a classic example of “man tinkering with nature that is fraught with grave and irreparable results.” Having been alarmed by the brewing conflict between the lake communities and the NPC and prompting the worsening civil unrest caused by the operations of the NPC hydroelectric installations, the Philippine Government under the leadership of then President Corazon C. Aquino directed a temporary suspension of the commissioning of Agus-1 until such time that the peoples were clarified on issues and their complaints addressed.

The worsening socio-economic conditions of the lake communities still prevail despite hosting the Agus power



*View of Lake Lanao (in Marawi City) from the rolling hills of MSU with the “Sleeping Beauty Mountain” in the background
(Photo: www.maranao.com)*

grids of the NPC. Reports have indicated that the Province of Lanao del Sur and its 39 municipalities and Marawi City belong to the poorest local units in the Philippines. Such situation has been compounded by the irony of lack of inadequate supply of electricity in the whole province. This led the local government units and the civil society of the province to push for the protection of the lake watershed and its environment, advancing that the host province of the Agus grids of NPC and its municipalities including Marawi City should benefit from the electric power supplied by the NPC.

The MSU, in a separate assessment of the problem, recommended the establishment of a Lake Lanao Development Authority in order to preserve the Lake and to be responsible in protecting, conserving, and developing Lake Lanao and its watershed. The establishment of such Agency would strike a balance between power generation for progress and alleviating poverty in lake communities. Along this development and recognizing that Lake Lanao is the second largest inland body of freshwater and a vital part of the powerful river system that generates bulk of the electric supply of Mindanao, former Philippine Senator Loren Legarda (a strong campaigner for environmental conservation) batted for the legislation of a bill seeking to establish a special agency that would look after Lake Lanao.

This also came in the light of the environmental concerns raised by the lake communities that have experienced flooding due to illegal logging, wastewater discharge by a growing population and the presence of six hydroelectric power plants operated by the NPC. In this connection, then Senator Aquilino Pimentel, Jr. supported Senator Legarda's proposal after receiving reports that the water level of Lake Lanao continues to decline and strongly pushed for the immediate legislation of the bill for the conservation of the Lake due to the looming power and civil crisis in the whole Mindanao. Many House Representatives from Lanao del Sur as well as from Marawi City have also advanced the need for the establishment of the Lanao Lake Development Authority to oversee the development and protection of the Philippines' second largest freshwater lake, however, until the present the creation of such agency has not yet been realized.

Recommendations and Future Actions

The MSU Alumni Association (MSUAA) during a workshop on the role of the MSUAA in promoting peace in Mindanao conducted on 15 August 2008 in Metro Manila, Philippines, recommended that peace can only be achieved in Mindanao if the socio-economic status of the peoples is improved. While discussing the present volatile peace situation in

Mindanao, the MSUAA workshop proclaimed that without livelihoods and where stomachs are empty, peace could never be attained. One of the approaches being considered by the MSUAA was to push for the establishment of a Lake Lanao Development Authority, the proposal of which has been initiated more than ten years ago. The MSUAA strongly believes that the conservation of the Lake could lead to improved livelihoods and ensure food security of the peoples in the lake communities.

Many members of the MSUAA who participated in the workshop belonged to the first students of MSU when it opened in 1962. They recalled that Marawi City and Lanao del Sur in the early 60s was a very peaceful place and there was good interrelationship between the Muslims and Christians in the whole province. It was also during the mid-60s until early 70s that many ecological studies were conducted in Lake Lanao by the MSU professors and students. However, after some progress and development in the province, the socio-economic status in the lake communities has ironically deteriorated that led to civil unrests.

The MSUAA therefore put forward a resolution which will be submitted to the MSU Administration and hopefully to be taken up with the Philippine Government, pushing for the establishment of the Lake Lanao Development Authority to be responsible for the conservation of the Lake and the development of the lake communities. The establishment of the said authority should take into consideration the lessons learned and experiences gained from the Laguna Lake Development Authority (LLDA) in order not to repeat the failures of the LLDA but to make use of the LLDA success stories. The development of the lake communities should also consider the creation of alternative livelihoods for the peoples through human resource development inculcating the need to conserve the resources of the lake which has been the source of food for the lake communities.

The MSUAA also recommended that the proposed Lake Lanao Development Authority should take into consideration the experiences from other countries in Southeast Asia specifically on co-management of lake fisheries using group user rights. Co-management has been considered as a strategy to strengthen the efficiency of lake fisheries management considering that increasing population and over-exploitation of the lake resources have accelerated the decline of the resources causing negative impacts on the livelihood of the people who depend on the lake for food. Under the co-management approach (Napaporn and Ekmaharaj, 2008), the participants are the users, the lake communities and the government, where their responsibilities, authority and roles in the management of the resources could be enhanced.

Together with the creation of the Lake Lanao Development Authority, the MSUAA also strongly recommended for the revival of Lanao del Sur and Marawi City as a tourist attraction. This would also provide additional livelihoods for the lake fishers by training them to become tourist guides. Many MSUAA members during the 15 August 2008 workshop recalled that in the 60s and 70s, the lake communities were once tourist spots visited by local and foreign tourists.

Reactivating these tourist spots could help provide alternative livelihoods to the peoples, increasing their incomes, filling their stomachs, and eventually achieving peace in this area in Mindanao. Home-stay could be promoted in the still existing “torogan”, an antique royal high roofed house with unique roof carvings, typical of a Maranao design. There are also ancestral homes that can be tapped for the home-stay program, where the visitors could be treated to a tour of the lake and observe the fishing and other related activities in the lake. There are also beaches like the Bagang Beach at the Caloocan Gulf located near Marawi City. Part of the guided tour could be the appreciation of the swiftest river in the Philippines, the Agus River, located in between Saduc and Lilod in Marawi City. Such recommendations however, would need financial support in order to be able to conduct human resource development as well as capacity building for the lake communities.

The development of the natural water resources for electric power generation such as the Lake Lanao and the Agus River is being tempered by a genuine concern for the protection and conservation of the resources in the Lake and Agus River. There is no problem about producing energy power for the sake of development but a problem could arise if there is no careful consideration of the need to preserve the natural wealth. As reiterated by the MSUAA during the August 2008 workshop, Lake Lanao is a God-given wealth to the present and the future generations. Therefore, the Lake must be preserved, conserved, protected, and developed in order that it could sustain its role in alleviating poverty in the lake communities and generating power for the peoples of Mindanao as well as in achieving peace in Mindanao.

References

- BFAR. 2005. The Philippine Fisheries Profile. Bureau of Fisheries and Aquatic Resources. Quezon City, Philippines
- DILG. 2008. Philippine Provincial Profile: Lanao del Sur. Department of Interior and Local Government, Quezon City, Philippines
- Eugenio, Damiana L (ed). 2008. Philippine Folk Literature: An Anthology. University of the Philippines Press. Quezon City, Philippines

- Fishbase 2003. Freshwater Fish Species in Lake Lanao (Mindanao, Philippines). Fishbase.org. 30 June 2003
- Gallardo, Froilan. 2006. Contaminated Lake Lanao in danger. In: MindaNews, Davao City, Philippines, Saturday, 14 October 2006
- LakeNet. 2008. LakeNet (<http://www.worldlakes.org>)
- Madale, Nagasura T. 2001. Tales from Lake Lanao and Other Essays. National Commission for Culture and the Arts. Manila, Philippines
- Naga, Pipalawan O. 2008. Location of Lake Lanao: The Lake Lanao Issue. www.worldlakes.org
- Napaporn Sriputinibondh and Siri Ekamaharaj. 2008. Co-management for reservoir/lake fisheries: Thailand initiative. In: Fish for the People, Vol 6 No 2 (2008). Southeast Asian Fisheries Development Center, Bangkok, Thailand
- Ranaw 2007. Lake Lanao (Ranaw). <http://www.ranaw.com>, Sunday, 26 August 2007
- Saber, Mamitua and Abdullah T. Madale. 1975. Etiological Legends: How the angels built Lake Lanao. In: The Maranao. Solidaridad Publishing House, Quezon City, Philippines
- Washburn, Lindy. 1978. Acquisition of land in Lanao del Sur by the National Power Corporation. In: Dansalan Quarterly, Vol. III No. 8-9, April-May 1978

About the Authors

Dr. Manaros Boransing is the Undersecretary of the Philippine Department of Education. In 1961, he was a member of the pioneering finance staff (the first University Accountant) and Professor in Business Administration of the Mindanao State University (MSU) in Marawi City, Lanao del Sur starting in 1962. Before his appointment as Undersecretary of the Education Department, Dr. Boransing held the position of Vice President for Academic Affairs of MSU in Marawi City and later as Vice President of the MSU-Iligan Institute of Technology in Iligan City, Lanao del Norte. He attended the MSUAA Workshop on the Role of the MSUAA in Promoting Peace in Mindanao (Philippines), held in Metro Manila, Philippines on 15 August 2008, where he has been requested to serve as the spokesperson for the MSUAA in advancing the recommendations of the workshop to the MSU Administration.

Ms. Virgilia T. Sulit is a member of the Editorial Team for Fish for the People based at the SEAFDEC Secretariat in Bangkok, Thailand. Prior to her involvement with the magazine Fish for the People, she was connected with the SEAFDEC Aquaculture Department in Iloilo, Philippines. She was one of the first 282 students enrolled at MSU when it opened in 1962, graduating with a B.Sc. degree in Mathematics in 1966, after which she served as Instructor in Mathematics at MSU from 1996 to 1972. As an alumnus of MSU, she also attended the MSUAA Workshop on the Role of the MSUAA in Promoting Peace in Mindanao, held in Metro Manila, Philippines on 15 August 2008.