

**Managing and Conserving Lake Buhi: An Agroecosystems Analysis  
for Sustainable Development**

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Lake Buhi in Camarines Sur, Philippines had been a subject of research and development interventions by national and international organizations because of its importance as the natural habitat of the world's smallest fish, *sinarapan* (*Misticthys luzonensis*) that had also been declared as "extremely critical" for conservation management. This study aimed to determine the agro-ecological practices of the upland and lakeside communities and their impact on Lake Buhi; assess the lake's carrying capacity vis-à-vis its current uses; and examine how local ordinances impact on the lake's sustainable use. Both technical and social science research methodologies were employed in the study: community surveys, participatory rapid assessment, focus group discussions, transect walk and mapping, SWOT analysis, and laboratory analysis of biophysico-chemical properties of lake waters, sediments and phytoplanktons.

Findings show that farmers, indigenous peoples (IPs) and fisherfolks adopted unsustainable practices in the watershed and lake resulting to a decrease in fish biodiversity and gradual disappearance of *sinarapan*. Analysis showed that the waters of Lake Buhi have high total suspended solids resulting to turbid waters, shallow depth, low pH (acidic), high chemical oxygen demand due to high organic matter; ammoniacal oxygen, nitrate nitrogen and phosphates are at toxic levels, indicating that the lake is under eutrophication. The presence of three polluted water algae and three odor algae also confirms high pollution levels. In essence, Lake Buhi's ecological quality has deteriorated.

To cope with the above dilemma, the LGU and local communities conducted trainings for environmental appreciation and awareness, and legislated appropriate ordinances. Relevant municipal ordinances and resolutions were also passed for stronger and more efficient implementation of projects for the sustainable development of Lake Buhi.

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